```
In[49]:= (*Assumptions*)
     Assumptions = Element[{r, s, x, y}, Reals] & r > 0 & s > 0 & x \ge 0 & x \le s & y \ge 0 & y \le s;
     (*Definitions*)
     star[x_, y_, r_, s_] :=
        Max[0, r^2ArcCos[(x+s/2)/r] - (x+s/2)Sqrt[r^2 - (x+s/2)^2]] +
        Max[0, r^2ArcCos[(3s/2-x)/r] - (3s/2-x)Sqrt[r^2 - (3s/2-x)^2]] +
        Max[0, r^2ArcCos[(y+s/2)/r] - (y+s/2)Sqrt[r^2 - (y+s/2)^2]] +
        Max[0, r^2ArcCos[(3s/2-y)/r] - (3s/2-y)Sqrt[r^2 - (3s/2-y)^2]] -
        Max[0, Integrate[Sqrt[r^2-t^2] - (3s/2-y), \{t, (3s/2-x), r\}]] -
        Max[0, Integrate[Sqrt[r^2-t^2]-(y+s/2), \{t, (x+s/2), r\}]]
        Max[0, Integrate[Sqrt[r^2-t^2] - (3s/2-y), \{t, (x+s/2), r\}]] -
        Max[0, Integrate[Sqrt[r^2-t^2] - (y+s/2), \{t, (3s/2-x), r\}]];
    fn[x_, y_, r_, s_] := Piecewise[{
         \{star[x, y, r, s], 0 \le s \le 2r\},
         \{0, 2r < s\}
        }];
    p[x_{y_{1}} := 1/s^{2};
     (*FN[r_,s_]=Integrate[fn[x,y,r,s]p[x,y],{x,0,s},{y,0,s}]*)
     *fp[x_,r_,s_]:=2s-(Min[x+2r,(3/2)s]-Max[x-2r,-s/2]);
    p[x_{-}]:=1/s;
    FP[r_,s_] = Integrate[fp[x,r,s]p[x],{x,0,s}];
     FN[r_,s_] = Integrate[fn[x,r,s]p[x],{x,0,s}];*)
     (*Prints*)
     star[x, y, r, s] // TraditionalForm
    PiecewiseExpand[star[x, y, r, s]] // Simplify // TraditionalForm
    fn[x, y, r, s] // TraditionalForm
    PiecewiseExpand[fn[x, y, r, s]] // Simplify // TraditionalForm
     (*FN[r,s]//Simplify//TraditionalForm*)
     (*fp[x,r,s]//TraditionalForm
              PiecewiseExpand[fp[x,r,s]] //Simplify//TraditionalForm
           FP[r,s]//Simplify//TraditionalForm
         FN[r,s]//Simplify//TraditionalForm*)
     (*Plots*)
     (*Plot3D[fp[x,1,s],{s,0,5},{x,0,s},AxesLabel\rightarrow Automatic]
      Plot3D[fn[x,1,s],\{s,0,5\},\{x,0,s\},AxesLabel\rightarrowAutomatic]
      Plot3D[{fp[x,1,s],fn[x,1,s]},{s,0,5},
       {x,0,s},AxesLabel→Automatic,PlotLegends→"Expressions"]
      Plot [\{fp[x,1,1.6],fn[x,1,1.6]\},
       {x,0,1.6},AxesLabel→Automatic,PlotLegends→"Expressions"]
      Plot[\{fp[x,1,3],fn[x,1,3]\},\{x,0,3\},AxesLabel\rightarrow Automatic,PlotLegends\rightarrow "Expressions"]
      Plot[{FP[1,s],FN[1,s]},{s,0,4},AxesLabel→Automatic,PlotLegends→"Expressions"]*)
```

Out[53]//TraditionalForm=

Conditional Expression $\left[-\max\right]$ 0,

$$\frac{1}{8}\left((2\,x-3\,s)\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,-4\,r^2\tan^{-1}\!\left(\frac{3\,s-2\,x}{\sqrt{4\,r^2-(3\,s-2\,x)^2}}\right)+2\,\pi\,r^2\right)-\frac{1}{4}\,(3\,s-2\,y)\,(2\,r-3\,s+2\,x)\right)-\\ \max\left(0,\,\frac{1}{8}\left((2\,x-3\,s)\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,-4\,r^2\tan^{-1}\!\left(\frac{3\,s-2\,x}{\sqrt{4\,r^2-(3\,s-2\,x)^2}}\right)+2\,\pi\,r^2\right)-\frac{1}{4}\,(s+2\,y)\,(2\,r-3\,s+2\,x)\right)-\\ \max\left(0,\,\frac{1}{8}\left(-(s+2\,x)\,\sqrt{4\,r^2-(s+2\,x)^2}\,-4\,r^2\tan^{-1}\!\left(\frac{s+2\,x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right)+2\,\pi\,r^2\right)-\frac{1}{4}\,(3\,s-2\,y)\,(2\,r-s-2\,x)\right)-\\ \max\left(0,\,\frac{1}{8}\left(-(s+2\,x)\,\sqrt{4\,r^2-(s+2\,x)^2}\,-4\,r^2\tan^{-1}\!\left(\frac{s+2\,x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right)+2\,\pi\,r^2\right)-\frac{1}{4}\,(s+2\,y)\,(2\,r-s-2\,x)\right)+\\ \max\left(0,\,\frac{1}{8}\left(-(s+2\,x)\,\sqrt{4\,r^2-(s+2\,x)^2}\,-4\,r^2\tan^{-1}\!\left(\frac{s+2\,x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right)+2\,\pi\,r^2\right)-\frac{1}{4}\,(s+2\,y)\,(2\,r-s-2\,x)\right)+\\ \max\left(0,\,r^2\cos^{-1}\!\left(\frac{\frac{3\,s}{2}-x}{r}\right)-\left(\frac{3\,s}{2}-x\right)\sqrt{r^2-\left(\frac{3\,s}{2}-x\right)^2}\right)+\\ \max\left(0,\,r^2\cos^{-1}\!\left(\frac{\frac{3\,s}{2}+x}{r}\right)-\left(\frac{s}{2}+x\right)\sqrt{r^2-\left(\frac{s}{2}+x\right)^2}\right)+\\ \max\left(0,\,r^2\cos^{-1}\!\left(\frac{\frac{s}{2}+y}{r}\right)-\left(\frac{s}{2}+y\right)\sqrt{r^2-\left(\frac{s}{2}+y\right)^2}\right),\,2\,r>s+2\,x\wedge2\,(r+x)>3\,s\right]$$

Out[54]//TraditionalForm=

$$\cos^{-1}\left(\frac{\frac{3s}{r}-x}{r}\right)r^{2} + \frac{1}{4}\sqrt{4r^{2} - (3s-2x)^{2}} \quad (2x-3s)$$

$$\sqrt{4r^{2} - (3s-2x)^{2}} \quad (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s-2y)^{2}} \quad (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^{2} - (s+2y)^{2}} \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}}\right)r^{2} + \frac{3s\left(4r+4x+4y+\sqrt{4r^{2} - (3s-2x)^{2}}\right)}{\sqrt{4r^{2} - (3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2} - (3s-2x)^{2}}}{\sqrt{4r^{2} - (3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2} - (3s-2x)^{2}}}{\sqrt{4r^{2} - (3s-2x)^{2}}}r^{2} + 12sr + \frac{4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)}{\sqrt{4r^{2} - (s+2x)^{2}}}r^{2} + 12sr + \frac{4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)}{r^{2}}r^{2} + 12sr + \frac{4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)}{r^{2}}r^{2}}r^{2} + 12sr + \frac{4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)}{r^{2}}r^{2}}r^{2}}r^{2}$$

 $(s+2x)(4v+\sqrt{4r^2-(s+2)})$

$$r^{2} \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right) - \frac{1}{4}\left(s+2x\right)\sqrt{4r^{2}-(s+2x)^{2}} \qquad \sqrt{\frac{1}{4}\left(4\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2}+4\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{3s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{3s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac{s}{2}-x\right)r^{2}+4\cos^{-1}\left(\frac{s}{2}-x\right)r^{2}+\frac{1}{4}\left(3\sin^{-1}\left(\frac$$

 $s\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(s+2x)^2}$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2\left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2s)^2}\right)^2+4sr+4sx+4y+\sqrt{4r^2-(3s-2s)^2}$$

$$4\tan^{-1}\left(\frac{3r-2r}{\sqrt{4r^2-(3s-2s)^2}}\right)^2+4sr+4sx+8xy+3s\sqrt{4r^2-(3s-2s)^2}$$

$$2\pi^2+6s^2+2\sqrt{4r^2-(3s-2s)^2}$$

$$2\pi^2+6s^2+2\sqrt{4r^2-(3s-2s)^2}$$

$$2(\pi^2+4yr+3s^2+6sx)\wedge$$

$$4\tan^{-1}\left(\frac{s-2r}{\sqrt{4r^2-(s-2s)^2}}\right)^2+4(s+2s)$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)$$

$$2(\pi^2+4yr+3s^2+6sx)\wedge$$

$$4\tan^{-1}\left(\frac{s-2r}{\sqrt{4r^2-(s-2s)^2}}\right)^2+4(s+2s)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\geq$$

$$2(\pi^2+(s+2x)(s+2y))$$

$$\sqrt{4r^2-(3s-2y)^2}(3s-2x)\geq 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}(3s-2y)<2$$

$$(s+2y)\sqrt{4r^2-(s+2x)^2}\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}(3s-2y)<2$$

$$(s+2y)\sqrt{4r^2-(s+2y)^2}\geq 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2r}{\sqrt{4r^2-(s+2x)^2}}\right)^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2r}{\sqrt{4r^2-(s+2x)^2}}\right)^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2\tan^{-1}\left(\frac{3s-2r}{\sqrt{4r^2-(s+2x)^2}}\right)^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)^2+4(s+2x)^2$$

$$2(\pi^2+4yr+3s^2+6sx)\wedge$$

$$4\tan^{-1}\left(\frac{s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)^2+4(s+2x)^2$$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{2 \sqrt{4 r^2 - (3s - 2x)^2}}{x + 2 \sqrt{4 r^2 - (3s - 2y)^2}} \right) y - \frac{3s \sqrt{4 r^2 - (3s - 2x)^2}}{x + 2 \sqrt{4 r^2 - (3s - 2y)^2}}$$

$$2(\pi r^{2} + (s + 2x)(s + 2y))$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) < 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) < 4$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right) r^{2} + 12sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right) r^{2} + 12sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right) r^{2} + 4(s + 2x) r^{2}$$

$$\frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 2\sqrt{4r^2 - (3s - 2y)^2} y - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2s)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2s)^2}$$

$$4tan^{-1} \left(\frac{s-2x}{\sqrt{4r^2 - (s+2s)^2}}\right) r^2 + 12sr + \frac{(s+2x)\left(4y + \sqrt{4r^2 - (s+2s)^2}\right)}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4(s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2s)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2s)^2} r^2 + 4sr + 4sx + 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2} \right)^2}{4t^2 - (3s - 2x)^2} \right)^2 + 4sr + \frac{4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 4sr + \frac{4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 12sr + \frac{4sx + 8xy + 3s^2 + 6s^2}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 12sr + \frac{(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2} \right)^2}{4t^2 - (3s - 2x)^2} + \frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + \frac{3s \sqrt{4r^2 - (3s - 2x)^2}}{2} \right)$$

$$= \frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + \frac{3s \sqrt{4r^2 - (3s - 2x)^2}}{2} \right)$$

$$= \frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + \frac{3s \sqrt{4r^2 - (3s - 2x)^2}}{2} \right)$$

$$= \frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + \frac{3s \sqrt{4r^2 - (3s - 2x)^2}}{2} \right)$$

$$= \frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{5s - x}{2}}{r} \right) r^2 + 4\cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4\cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4\sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr + 4\sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + 4s$$

$$\left(\sqrt{4r^2 - (sr2x)^2}\right)$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s+2)}\right)$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s+2)}\right)$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s+2)}\right)$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2}$$

$$(s + 2x) (s + 2y)$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2}$$

$$(s + 2x) \sqrt{4r^2 - (s+2$$

 $4 \tan^{-1} \left(\frac{3 - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 2 \sqrt{4 r^2 - (3s - 2y)^2} y - 3 s \sqrt{4 r^2 - (3s - 2x)^2} - 3 s \sqrt{4 r^2 - (3s - 2y)^2} - s \sqrt{4 r^2 - (s + 2y)^2} - 2 y \sqrt{4 r^2 - (s + 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(3s - 2x \right) r^2 + 4(s+2x) \left($$

$$\frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 2 \cos^{-1$$

$$\frac{1}{4} \left(4\cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4\cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 2\sqrt{4r^2 - (3s - 2x)^2} \quad x + 2\sqrt{4r^2 - (3s - 2y)^2} \quad y - 3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2} - s\sqrt{4r^2 - (s + 2y)^2} - 2y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2s)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2s)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2s)^2} \right) r^2 + 4(s+2s)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2s)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 4y + \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 (\pi r^2 + 4yr + 3s^2 + 6sx) \wedge 4$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 (\pi r^2 + (s+2x)(s+2y))$$

$$\cos^{-1}\left(\frac{\frac{3s-x}{2}}{r}\right)r^2 + \tan^{-1}\left[\frac{\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}}{\sqrt{r^2-1}}\right]r^2 - \frac{\pi r^2}{2} + 2sr - 3s^2 + 2sx$$

$$\frac{1}{4} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 12 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) < 4r$$

$$(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^{2} - (s + 2x)} \right) r^{2} + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^{2} - (s + 2x)^{2}} \right) r^{2} + 4(s + 2x) r^{2} + 4($$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx - 2\sqrt{4r^2 - (3s - 2x)^2} \right) x - \frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2} \right) r^2 - \frac{1}{8} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s -$$

$$12 sy + 8 xy + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x + 2\sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8xy - 3s \sqrt{4r^2 - (3s - 2x)^2} \right)$$

$$(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 +$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 12sr +$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2 + 12sr +$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)\wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\right)r^2 + 4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2-(3s-2x)^2} (3s-2y) \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 +$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$r^2+12sr+$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr +$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr +$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr +$$

$$(s+2x)\left(4y+\sqrt{4y^2-(s+2x)}\right)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s^2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2-2\pi r^2+$$

$$4sr+8yr-6s^2+4sx+2\sqrt{4r^2-(3s-2x)^2}$$

$$12sy+8xy-3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2-2\pi r^2+$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4(s+2x)$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(3s-2x)^2}\right)r^2+4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(3s-2x)^2}$$

$$2(\pi r^2+4yr+3s^2+6sx)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(s+2x)^2}-2(\pi r^2+(s+2x)(s+2x))$$

$$2(\pi r^2+4sr-4x-2x)$$

$$2(\pi r^2+(s+2x)(s+2x))$$

$$4^2-(3s-2x)^2(3s-2x)^2(3s-2x)^2+4r$$

$$2x^2+8sr-12s^2+8sx-2x$$

$$2(\pi r^2+(s+2x)(s+2x))$$

$$2(\pi r^2+(s+2x)(s+2x))$$

$$4^2-(3s-2x)^2(3s-2x)^2+4r$$

$$4^2-(3s-2$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - 3s^{2} + 2sx - \\ \frac{1}{4}s\sqrt{4r^{2}-(s+2x)^{2}} - \frac{1}{2}x\sqrt{4r^{2}-(s+2x)^{2}}$$

$$\begin{cases} \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \ \end{cases}$$

$$3 \, s \left(4 \, r + 4 \, x + 4 \, y + \sqrt{4 \, r^2} - (3 \, s - 4 \, tan^{-1} \left(\frac{3 \, s - 2 \, x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) \, r^2 + 4 \, s \, r + 4 \, s \, x + 8 \, x \, y + 3 \, s \, \sqrt{4 \, r^2} - (3 \, s - 2 \, x)^2} \right) \, r^2 + 4 \, s \, r + 4 \, s \, x + 8 \, x \, y + 3 \, s \, \sqrt{4 \, r^2} - (3 \, s - 2 \, x)^2} \, d \, tan^{-1} \left(\frac{s + 2 \, x}{\sqrt{4 \, r^2 - (s + 2 \, x)^2}} \right) \, r^2 + 12 \, s \, r + (s + 2 \, x) \left(4 \, y + \sqrt{4 \, r^2} - (s + 2 \, x) \right) \, d \, d \, tan^{-1} \left(\frac{s + 2 \, x}{\sqrt{4 \, r^2 - (s + 2 \, x)^2}} \right) \, r^2 + 4 \, (s + 2 \, x)^2 \, d \, r^2 + (s + 2 \, x) \, (s + 2 \, x) \right) \, d \, r^2 - (3 \, s - 2 \, x)^2 \, (3 \, s - 2 \, x) < 4 \, r \, d \, r \, d \, r^2 - (3 \, s - 2 \, x)^2 \, d \, r^2 \, d \, r$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 x)^2} - 4 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 -$$

$$4 \tan^{-1} \left| \frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right| r^2 + 4(s+2)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} (3s-2y) \ge 4$$

$$(s+2x)\sqrt{4r^2-(s+2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right) r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 12sr + (s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4(s+2x)\left(4x+2x\right)\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} (3s-2y) \ge 4r$$

$$(s+2y)\sqrt{4r^2-(s+2x)^2} (3s-2y) \ge 4r$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4r$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4r$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4r$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4r$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4r$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4r$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{r}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} - 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + (-3s-4)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + (-3s-2)$$

$$2 \pi r^2 + 6s^2 + 2 \sqrt{4r^2 - (3s-2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (-3s-2)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (-3s-2)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(-3s-2x) \sqrt{4r^2-(s+2x)^2}$$

$$(-3s-2x)^2 (-3s-2x) + (-3s-2x)^2$$

$$(-3s-2x)^2 (-3s-2x)^2$$

$$(-3s-2x)^2 (-3s-2x)^2$$

$$(-3s-2x)^2$$

$$(-3$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy - 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx - 2\sqrt{4r^2 - (3s - 2x)^2} x + 2\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) < 4r$$

$$(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} \right) r^{2} + 4sr +$$

$$4sr + 8xy + 3s \sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^{2} - (s + 2x)^{2}} \right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4r^{2}$$

$$(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (s + 2x)^{2}} \right) x^{2} + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr +$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{3s}{2}-y}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - 3s^{2} + 2sx + \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2y)^{2}}y - \frac{3}{4}s\sqrt{4r^{2}-(3s-2y)^{2}}$$

$$\frac{1}{4}\left(4\cos^{-1}\left(\frac{\frac{s}{s}+x}{r}\right)r^{2} + 4\cos^{-1}\left(\frac{\frac{3s}{s}-y}{r}\right)r^{2} + \right)$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2)} \right) r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4y r + 3 s^{2} + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} \ge 2 (\pi r^{2} + (s+2x)(s+2y))$$

$$\sqrt{4 r^{2} - (3 s - 2x)^{2}} (3 s - 2x) < 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} \ge 4 r^{2}$$

$$\sqrt{4 r^{2} - (3 s - 2y)^{2}} (3 s - 2y) < 4 r$$

$$(s+2y) \sqrt{4 r^{2} - (s+2y)^{2}} \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}} \right) r^{2} +$$

$$3 s \left(4 r + 4x + 4y + \sqrt{4 r^{2} - (3 s - 2x)^{2}} \right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}} \right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)} \right) r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4 y r + 3 s^{2} + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}$$

$$2 \left(\pi r^{2} + (s+2x) (s+2y) \right)$$

$$\sqrt{4 r^{2} - (3 s - 2x)^{2}} (3 s - 2x) \ge 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} < 4 r^{2}$$

 $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$

$$4 \tan^{-1} \left| \frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right| r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx - 2\sqrt{4r^2 - (3s-2x)^2} x + 2\sqrt{4r^2 - (3s-2x)^2} y + 3s\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (s+2x)^2} - 2x\sqrt{4r^2 - (s+2x)^2} - 3s\sqrt{4r^2 - (s+2x)^2} - 3s\sqrt{4r^2 - (3s-2y)^2} \right|$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx + 2\sqrt{4r^2 - (3s - 2y)^2} y - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) < 2$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} \right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sr + 4sx + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) r^{2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}$$

$$\left(\sqrt{4r^2 - (s+2x)^2}\right)$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4\left(s+2\right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \geq 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \geq 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \geq 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \geq 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \geq 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \geq 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \geq 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \geq 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \geq 4r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s-2x}{2} - y}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x + 2 \sqrt{4r^2 - (3s-2x)^2} x + 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y - 3 s \sqrt{4r^2 - (3s-2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - 4t^2 - (3s^2 - 4t^2 - (3s^2 - 4t^2 - (3s^2 - 2t^2 - 2t^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2\sqrt{4r^2 - (3s-2x)^2} x + 12 s y - 8 x y + 4\sqrt{4r^2 - (3s-2y)^2} y + 3 s\sqrt{4r^2 - (3s-2x)^2} - 2 s\sqrt{4r^2 - (s+2x)^2} - 4 x\sqrt{4r^2 - (s+2x)^2} - 6 s\sqrt{4r^2 - (3s-2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 (\pi r^2 + (s+2x)^2 (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) r^2 + 4r^2 \left(3s-2y \right) r^2 + 4r^2 \left(3s-2x \right) r^2 + 4r^2 \left($$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

 $8 vr + 18 s^2 + 2 \sqrt{4 r^2 - (3 s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$ $2(\pi r^2 + (s+2x)(s+2y))$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$ $(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$ $(s+2y)\,\sqrt{4\,r^2-(s+2\,y)^2}\,\geq 4\,r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - 6}\right)$ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2} >$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - \frac{y}{r} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

 $4sx + 8xv + 3s\sqrt{4r^2 - (3s)^2}$

 $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$

 $3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - 6}\right)$

 $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$

 $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$

 $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2s)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2s)^2}$$

$$4tan^{-1} \left(\frac{s_2 x}{\sqrt{4r^2 - (s_2 x_3^2)}}\right) r^2 + 12sr + \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_3^2)}} r^2 + 12sr + \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_3^2)}} r^2 + 4sr + \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_3^2)}} r^2 + 4sr + \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_3^2)^2}} r^2 - \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_2^2)^2}} r^2 + 4tan^{-1} \left(\frac{\frac{s_2 x}{\sqrt{4r^2 - (s_2 x_3^2)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 - \frac{s_2 x}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 - \frac{s_2 x}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 - \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_2^2)^2}} r^2 + 4tan^{-1} \left(\frac{\frac{s_2 x}{\sqrt{4r^2 - (s_2 x_2^2)^2}}}{\sqrt{4r^2 - (s_2 x_2^2)^2}} r^2 + 4sr + \frac{s_2 x}{\sqrt{4r^2 - (s_2 x_2^2)^2}}$$

$$\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 - \frac{\pi r^2}{2} + 2sr - 3s^2 + 2sx - \frac{1}{4}s\sqrt{4r^2-(s+2y)^2} - \frac{1}{2}y\sqrt{4r^2-(s+2y)^2}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx - 2\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx - 2\sqrt{4r^2 - (3s - 2x)^2} r^2 + 3s\sqrt{4r^2 - (3s - 2x)^2} - r^2 + 3s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - r^2 + 3s\sqrt{4r^2 -$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 12 s^2 + 8 s x - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - s \sqrt{4r^2 - (s + 2y)^2} - 2 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 +$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r + \frac{1}{2} (s+2x) \left(4y + \sqrt{4r^2-(s+2x)} \right) r^2 + 4 (s+2x) \left(4y + \sqrt{4r^2-(s+2x)} \right) r^2 + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2} \right) r^2 + 4 (s+2x) \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r + \frac{(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2} \right) r^2 + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2x) \left($$

$$12s^{2} + 6sx - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x + 2\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3s\sqrt{4r^{2} - (3s - 2x)^{2}} - 3s\sqrt{4r^{2} - (3s - 2y)^{2}} - s\sqrt{4r^{2} - (s + 2y)^{2}} - 2y\sqrt{4r^{2} - (s + 2y)^{2}}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx + 2\sqrt{4r^2 - (3s-2y)^2} y - 3s\sqrt{4r^2 - (3s-2y)^2} - s\sqrt{4r^2 - (s+2y)^2} - 2y\sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 12s^2 + 8sx - 2\sqrt{4r^2 - (3s - 2x)^2} x + 2\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 3s\sqrt{4r^2 - (s + 2x)^2} - 3s\sqrt{4r^2 - (s + 2y)^2} - 2y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$4 \tan^{-1} \left(-\frac{1}{\sqrt{3}} \right)^{-1}$$

$$(s + 2)$$

$$2 \left(\pi r^{2} \right)^{-1}$$

$$4 \tan^{-1} \left(-\frac{1}{\sqrt{3}} \right)^{-1}$$

$$(s + 2)$$

$$2 \left(\pi r^{2} \right)^{-1}$$

$$(s + 2)$$

$$2 \left(\pi r^{2} \right)^{-1}$$

$$4 \cos^{-1} \left(-\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \cot^{-1} \left(-\frac{\frac{3s}{2} - y}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \cos^{-1} \left(-\frac{\frac{s}{2} + y}{r} \right) r^{2} + 4 \tan^{-1} \left(-\frac{\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2y)^{2}}} \right) r^{2} - \frac{(s + 2x)^{2}}{\sqrt{4r^{2} - (3s - 2y)^{2}}} - 2x \sqrt{4r^{2} - (s + 2x)^{2}} - 3s \sqrt{4r^{2} - (3s - 2y)^{2}} - 4 \tan^{-1} \left(-\frac{\sqrt{3s - 2x}}{\sqrt{4r^{2} - (3s - 2y)^{2}}} \right) r^{2} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (3s - 2y)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} - \frac{\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4x + 2x + 2x + 2x + 2x + 2x + 2x \right) r^2 + 4(s+2x) \left(4x + 2x + 2x + 2x + 2x \right) r^2 + 4(s+2x) \left(3s - 2x + 2x \right) r^2 + 4(s+2x) r^2 + 4(s+2$$

 $s\sqrt{4r^2-(s+2y)^2}-2y\sqrt{4r^2-(s+2y)^2}$

 $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$

 $3s(4r+4x+4y+\sqrt{4r^2}-($ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$ $2(\pi r^2 + (s + 2x)(s + 2y))$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2}<4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3s(4r+4x+4y+\sqrt{4r^2-6})$ $8 y r + 18 s^2 + 2 \sqrt{4 r^2 - (3 s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + \sqrt{s} \right) \\
4 s r + 8 y r - 6 s^2 + 4 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2 - (3s-2x)^2}\right)r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4x+2x\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4x+2x\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4x+2x\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4r^2$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r^2$$

$$4\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4r^2$$

$$4\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 3s\left(4r+4x+4y+4y+4r^2 - (s+2x)^2\right)r^2 + 3s\left(4r+4x+$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy - 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 12 s r + \frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 12 s r + \frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 12 s r + \frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s + 2)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s + 2)$$

$$(s + 2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s + 2)$$

$$(s + 2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s + 2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s + 2y) \sqrt{4 r^{2} - (s+2y)^{2}} r^{2} + 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r + \frac{4sx + 4x + 4y + \sqrt{4 r^{2} - (3s-2x)^{2}}}{\sqrt{4 r^{2} - (3s-2x)^{2}}} r^{2} + 4 s r + \frac{4sx + 8xy + 3s \sqrt{4 r^{2} - (3s-2x)^{2}}}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 12 s r + \frac{(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)^{2}} \right)}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4yr + 3s^{2} + 6sx\right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

 $4 \tan^{-1} \left(\frac{3 \cdot 2 \cdot 3}{\sqrt{4 \cdot r^2 - (3 \cdot s - 2 \cdot x)^2}} \right) r^2 + 4 \cdot s \cdot r +$

 $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$

$$\frac{8}{8} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right)^{r^2} - 2\pi r^2 + 12sr - 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right)^{r^2} - 2\pi r^2 + 12sr - 8yr - 18s^2 + 12sx - 2\sqrt{4r^2 - (3s-2x)^2} x + 12sy - 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - 4x\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 8 y r - 6 s^2 + 4 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 x)^2} - 4 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 + 4(s+2x)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + V \right) \\
+ 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} - 4 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right) \\
+ \frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + V \right) \right) \right) + \sqrt{\frac{1}{8}} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + V \right) \right) \right)$$

 $4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4s^2-(3s-2x)^2}} \right) r^2 - 2\pi r^2 + 4sr +$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r + \frac{12 s r}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{12 s r}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{12 s r}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 s + \frac{12 s r}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 s + \frac{12 s r}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 s + \frac{12 s r}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 4 s + \frac{12 s r}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 4 s + \frac{12 s r}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + \frac{12 s r}{\sqrt{4r^2 -$$

$$8 y r - 6 s^{2} + 4 s x + 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x - 12 s y + 8 x y - 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 4 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 +$$

$$(s+2x)\left[\frac{4y+\sqrt{4r^2-(s+2x)}}{2(\pi r^2+4yr+3s^2+6sx)}\right] r^2 + 4(s+2)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 2(\pi r^2+(s+2x)(s+2y))$$

$$\frac{1}{8}\left[8\cos^{-1}\left(\frac{\frac{3s-2x}{4}}{4r^2-(s+2s)^2}\right)r^2 + 8\cos^{-1}\left(\frac{\frac{2s+y}{r}}{r}\right)r^2 + 4sr + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{3s\sqrt{4r^2-(s+2x)^2}} \ge 4r^2 + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{4r^2-(3s-2y)^2} \ge 4r^2 + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{3s\sqrt{4r^2-(s+2x)^2}} \ge 4r^2 + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{3s\sqrt{4r^2-(s+2x)^2}} \ge 4r^2 + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{3s\sqrt{4r^2-(s+2y)^2}} - \frac{4\tan^{-1}\left(\frac{3s-2x}{4r^2-(s+2x)^2}\right)r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(s+2y)^2}}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(s+2x)^2}} r^2 + 4yr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(s+2x)^2}} r^2 + 4(s+2x)\sqrt{4r^2-(s+2x)^2} + \frac{2(\pi r^2+4yr+3s^2+6sx)}{\sqrt{4r^2-(s+2x)^2}} r^2 + 4(s+2x)\sqrt{4r^2-(s+2x)^2} r^2 + 4(s+2x)\sqrt{4r^2-(s+2x)^2} r^2 + 4(s+2x)\sqrt$$

 $3 \text{ s.a.} \sqrt{4 r^2 + (3 \text{ s.} - 2 \text{ s.})^2}$ $6 \text{ s.a.} \sqrt{4 r^2 + (3 \text{ s.} - 2 \text{ s.})^2}$

 $4 \tan^{-1} \left(\frac{s+2x}{r} \right) r^2 + 4 (s+2)$

$$2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2}$$

$$2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2}$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} - 8yr + 18s^2 + 2\sqrt{4r^2 - (3s-2x)^2} \right)^2 + 4sr + 4sr + 4sr + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} + 4tar^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}}\right)^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2} - 2(\pi r^2 + 4yr + 3s^2 + 6sx)\right)$$

$$\frac{1}{8}\left(8\cos^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)^2 - 2\pi r^2 + 4sr + (s+2x)\left(3s-2x\right)^2\right)^2 + 4sr + (s+2x)\left(3s-2x\right)^2\right)$$

$$\frac{1}{8}\left(8\cos^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)^2 - 2\pi r^2 + 4sr + (s+2x)(s+2y)\right)$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)^2 - 2\pi r^2 + 4sr + (s+2x)(s+2y)^2$$

$$8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s-2x)^2}x - (s+2x)\sqrt{4r^2 - (s+2x)^2} + 24r^2$$

$$12sy + 8xy + 4\sqrt{4r^2 - (3s-2x)^2}y - 3s\sqrt{4r^2 - (3s-2x)^2} - 6s\sqrt{4r^2 - (3s-2x)^2}y - 4y\sqrt{4r^2 - (s+2y)^2} + 4tar^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4y\sqrt{4r^2 - (s+2x)^2}y - 4tar^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4y\sqrt{4r^2 - (s+2x)^2}y - 4y\sqrt{4r^2 - (s+2x)^2}y - 4y\sqrt{4r^2 - (s+2x)^2}y - 4y\sqrt{4r^2 - (s+2x)^2}y - 4tar^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4tar^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}y - 4tar^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)^2 + 4sr + 4sx + 4y + 4y + 4r^2 - 4sr + 4x + 4y + 4y + 4r^2 - 4sr + 4x + 4y + 4y + 4r^2 - 4sr + 4x + 4y + 4y + 4r^2 - 4sr + 4x + 4y + 4y + 4r^2 - 4sr + 4x + 4y + 4x +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3 s\sqrt{4r^2 - (3s - 2x)^2} - 2 s\sqrt{4r^2 - (s + 2x)^2} - 4 x\sqrt{4r^2 - (s + 2x)^2} - 6 s\sqrt{4r^2 - (3s - 2y)^2} - 2 s\sqrt{4r^2 - (3s - 2y)^2} - 2 s\sqrt{4r^2 - (s + 2y)^2} - 4 y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2$$

$$\left(\sqrt{4r^2 - (s+2x)^2}\right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right)r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2x)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} > 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2y) < 4r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12sr - 8yr - 18s^2 + 12sx + 2\sqrt{4r^2 - (3s - 2x)^2} x + 12sy - 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} - 2s\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s)}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2)} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{1}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 \cdot 2 \cdot 2}{\sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}} \right) r^2 - 2 \pi r^2 + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}} (3 \cdot s - 2 \cdot y) < 4 \cdot r^2 + 8 \cdot x + 4 \cdot \sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2} \right) r^2 - 2 \pi r^2 + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}} (3 \cdot s - 2 \cdot y) < 4 \cdot r^2 + 4 \cdot x + 2 \cdot \sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}} r^2 - \frac{4 \cdot x \sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (3 \cdot 8 - 2 \cdot y)^2}} - \frac{4 \cdot x \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2} - 6 \cdot s \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}} - \frac{4 \cdot x \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}} - \frac{4 \cdot x \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}} - \frac{3 \cdot s \left(4 \cdot r + 4 \cdot x + 4 \cdot y + \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2} \right)}{\sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}} r^2 + 4 \cdot s r + \frac{4 \cdot x - 4 \cdot y + \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}} r^2 + 4 \cdot s r + \frac{4 \cdot x - 4 \cdot y + \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}} r^2 + 4 \cdot s r + \frac{4 \cdot x - 4 \cdot y + \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot x) \sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} r^2 + 4 \cdot s r + \frac{(s + 2 \cdot$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)}$$

$$4 \tan^{-1} \left(\frac{s \cdot 2x}{\sqrt{4r^2 - (st \cdot 2s)^2}} \right) r^2 + 12sr + (s + 2x) \left(4y + \sqrt{4r^2 - (st \cdot 2s)} \right) r^2 + 12sr + (s + 2x) \left(4y + \sqrt{4r^2 - (st \cdot 2s)} \right) r^2 + 12sr + (s + 2x) \left(4y + \sqrt{4r^2 - (st \cdot 2s)} \right) r^2 + 4(s + 2) \left(\frac{s \cdot 2x}{\sqrt{4r^2 - (st \cdot 2s)^2}} \right) r^2 + 4(s + 2) \left(\frac{s \cdot 2x}{\sqrt{4r^2 - (st \cdot 2s)^2}} \right) r^2 + 4(s + 2s) \left(\frac{s \cdot 2x}{\sqrt{4r^2 - (st \cdot 2s)^2}} \right) r^2 - (s + 2x) \sqrt{4r^2 - (st \cdot 2s)^2} + (s + 2x) (s + 2y) \right) r^2 + (s + 2x) \left(\frac{s \cdot 2x}{\sqrt{4r^2 - (3s - 2y)^2}} \right) r^2 + (s + 2x) \left(\frac{3s \cdot 2x}{\sqrt{4r^2 - (3s - 2y)^2}} \right) r^2 + 4sr + (s + 2x) \left(\frac{3s \cdot 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr + (s + 2x) \left(\frac{3s \cdot 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr + (s + 2x) \left(\frac{3s \cdot 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 12sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4sr + (s + 2x) \left(4y + \sqrt{4r^2 - (3s$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 4 r^2 + 8 r + 8 r - 2 r^2 - 4 r^2 + 4 r^2 - (r^2 + r^2 + r^$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}$$

$$2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

 $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y + s \sqrt{4 r^2 - (s+2x)^2} + 2 x \sqrt{4 r^2 - (s+2x)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4s^2 - 8sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\left(s+2\right)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)\geq 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)r^2+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+4\left(s+2\right)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\left(s+2\right)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\geq 2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$4 \tan^{-1} \left[\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right] r^2 + \frac{3s}{4r^2-(3s-2x)^2}$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + \frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx}{\sqrt{4r^2-(s+2x)^2}} r^2 + 12sr + \frac{(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2} + 2sx + 4sx + 2sx + 3s^2 + 6sx\right) \wedge 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{4r^2}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4r^2}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4sr}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4sr}{\sqrt{4$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4\sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8xy - 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - s^{2} - 2sx + \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2x)^{2}}x - \frac{3}{4}s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s}{2} + x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s}{2} + \frac$$

$$8yr + 18s^{2} + 2\sqrt{4r^{2} - (3s^{2})}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (3s^{2})}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) + \frac{(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4(s + 2x) + \frac{(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4r^{2} + \frac{(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4r^{2}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4r^{2}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4r^{2}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 4yr + 3s^{2} + 6sx\sqrt{4r^{2} - (3s - 2x)^{2}}}{r^{2} + 4sr + \frac{4sx + 4yr + 3s^{2} + 6sx\sqrt{4r^{2} - (3s - 2x)^{2}}}{r^{2} + 4sr + \frac{4sx + 4yr + 3s^{2} + 6sx\sqrt{4r^{2} - (3s - 2x)^{2}}}{r^{2} + 4sr + \frac{4sx + 4yr + 3s^{2} + 6sx\sqrt{4r^{2} - (3s - 2x)^{2}}}{r^{2} + 4sr + \frac{4sx + 4yr + 3s^{2} + 6sx\sqrt{4r^{2} - (3s - 2x)^{2}}}{r^{2} + 4sr + \frac{4sx + 4yr + 3s^{2} + 6sx$$

 $2(\pi r^2 + (s+2x)(s+2y))$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y - 12 s \sqrt{4 r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}}\right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sr + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4sr + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}}\right)}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}})}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{4sr^{2} - (3s^{2} - 2x)^{2}}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{4sr^{2} - (3s^{2} - 2x)^{2}}{\sqrt{4r^{2} - (3s^{2} - 2x)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y - 6 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s+2x)^2} - 2x \sqrt{4r^2 - (s+2x)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - \frac{1}{4} \left(\frac{s + 2x}{r} \right) r^2 \right) r^2 + \frac{1}{4} \left(\frac{s + 2x}{r} \right) r^2 + \frac{1}{4} \left(\frac{s + 2x$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s)}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 12 s r + (s+2x) \left(4y + \sqrt{4 r^{2} - (s+2)}\right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s+2y) \sqrt{4 r^{2} - (s+2y)^{2}} r^{2} + 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}}\right) r^{2} + 4 s r + 4 r^{2}$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}}\right) r^{2} + 4 s r + 4 r^{2} + 6 r^{2} + 2 \sqrt{4 r^{2} - (3s-2x)^{2}}$$

$$2 \pi r^{2} + 6 r^{2} + 2 \sqrt{4 r^{2} - (3s-2x)^{2}} r^{2} + 4 r^{2} + 6 r^{2} + 2 \sqrt{4 r^{2} - (3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 12 s r + (s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)}\right) r^{2} + 4 (s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)}\right) r^{2} + 4 (s+2x) \left(4r^{2} + (s+2x) (s+2x)\right) r^{2} + 4 (s+2x) r^{2} + 6 r^{2} + 2 r^{2} r^{2} r^{2} + 6 r^{2} + 2 r^{2} r^{2} r^{2} + 6 r^{2} r^{2} r^{2} r^{2} + 6 r^{2} r^{2} r^{2} r^{2} r^{2} + 6 r^{2} r^{2$$

$$2\pi r^{2} + 8sr - 4s^{2} - 8sx + 2\sqrt{4r^{2} - (3s - 2y)^{2}}y + s\sqrt{4r^{2} - (s + 2x)^{2}} + 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 3s\sqrt{4r^{2} - (3s - 2y)^{2}}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4 s^2 - 8sx + 2\sqrt{4 r^2 - (3s - 2x)^2} x + 2\sqrt{4 r^2 - (3s - 2y)^2} y - 3s\sqrt{4 r^2 - (3s - 2x)^2} + s\sqrt{4 r^2 - (s+2x)^2} + 2x\sqrt{4 r^2 - (s+2x)^2} - 3s\sqrt{4 r^2 - (3s - 2y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} \quad (3s - 2y) < 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4sx + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} + 4sr + 4x + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} r^{2} + 4sr + 4x + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} r^{2} r^{2} r^{2} + 4sr + 4x + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} r^{2} r^$$

$$\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{3s}{2}-y}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - s^{2} - 2sx + \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2y)^{2}}y - \frac{3}{4}s\sqrt{4r^{2}-(3s-2y)^{2}}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + \frac{1}{2} \right) r^2 + \frac{1}{4} \left(\frac{s + 2x}{r} \right)$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)^{r^2+128r+1}$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)}\right)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\left(s+2\right)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$2\left(\pi r^2+(s+2x)\left(s+2y\right)\right)$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)\geq 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)<2$$

$$(s+2y)\sqrt{4r^2-(s+2y)^2}\geq 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(s+2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2(\pi r^2+4yr+3s^2+6sx)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\left(s+2x\right)$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+4\left(s+2x\right)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$2\left(\pi r^2+(s+2x)\left(s+2x\right)\right)$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$$

$$2(\pi r^2+(s+2x)(s+2y))$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r^2$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r^2$$

$$2\sqrt{4r^2 - (3s - 2x)^2} x + 2\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - 4s^2)^2} \right)}{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - 4s^2)^2} \right)} r^2 + \frac{4sr + 4sr +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + \frac{12sr - 8yr - 6s^2 - 12sx + 4sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2}}{y + s\sqrt{4r^2 - (s + 2x)^2}} + \frac{2x\sqrt{4r^2 - (s + 2x)^2}}{-6s\sqrt{4r^2 - (3s - 2y)^2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4sr + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 5 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2 (\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+$$

$$2x \sqrt{4r^2 - (s + 2x)^2} - 6s \sqrt{4r^2 - (5s - 2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$8yr + 18s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} \right) r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s^{2})^{2}}}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 12sr + \frac{4sx^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}}{\sqrt{4r^{2} - (s^{2} + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s^{2} + 2x)^{2}}} r^{2} + 4(s + 2x^{2} + 4yr + 3s^{2} + 6sx) + \frac{(s + 2x)\sqrt{4r^{2} - (s^{2} + 2x)^{2}}}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4(s + 2x^{2} + 4yr^{2} + 4yr$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 2s^2 - 4sx - 4sy - 8xy + 4\sqrt{4r^2 - (3s-2y)^2} y - s\sqrt{4r^2 - (s+2x)^2} - 2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (3s-2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - s \sqrt{4r^2 - (s+2x)^2} - 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$(s+2x)\sqrt{4r^2} - (s+2x)^2 \ge 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} (3s-2x) \ge 4r$$

$$(s+2y)\sqrt{4r^2 - (s+2x)^2} (3s-2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2$$

 $\sqrt{4 r^2 - (3 s - 2 x)^2}$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2s)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2s)^2}$$

$$4 \tan^{-4} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2s)^2}}\right) r^2 + 12sr + \frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{2s-x}{r}}{r}\right) r^2 + 8 \cos^{-1} \left(\frac{\frac{2s-x}{r}}{r}\right) r^2 + 8 \cos^{-1} \left(\frac{\frac{2s-x}{r}}{r}\right) r^2 + 8 \cos^{-1} \left(\frac{\frac{2s-x}{r}}{r}\right) r^2 + 4 \cos^{-1} \left(\frac{3s-x}{r}\right) r^2 + 4 \cos^{-1} \left(\frac{3s-x$$

 $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r -$ $8 y r - 6 s^2 - 12 s x + 4 \sqrt{4 r^2 - (3 s - 2 x)^2} x +$ $4 s y + 8 x y + 4 \sqrt{4 r^2 - (3 s - 2 y)^2} y -$ $6 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} -$

$$2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (3s-2y)^2}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - s \sqrt{4r^2 - (s+2y)^2} - 2 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 + 4($$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + 5 \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 5 \sqrt{4 r^2 - (s + 2 y)^2} - 2 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - s^{2} - 2sx - \\ \frac{1}{4}s\sqrt{4r^{2}-(s+2v)^{2}} - \frac{1}{2}v\sqrt{4r^{2}-(s+2v)^{2}} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 s r + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 (s+2x) + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 (s+2x) + \frac{1}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 4 (s+2x) + \frac{1}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 4 (s+2x) + \frac{1}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 4 s r + \frac{1}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 4 s r + \frac{1}{\sqrt{4r^2 - (3s-2x)^2}} r^2 + 12 s r + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{1}{\sqrt{4r^2 - (s+2x)^2}} r^2 + 4 (s+2x) + \frac{1}{\sqrt{4r^2 - (s+2x)^2$$

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$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + 2 \sqrt{4 r^2 - (3 s - 2x)^2} x - 3 s \sqrt{4 r^2 - (3 s - 2x)^2} - s \sqrt{4 r^2 - (s + 2y)^2} - 2 y \sqrt{4 r^2 - (s + 2y)^2} \right)$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 +$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{2} - y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2y)^2} y + 5 \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 3 s \sqrt{4r^2 - (3s - 2y)^2} - 5 x \sqrt{4r^2 - (s+2y)^2} - 2 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 2 \sqrt{4 r^2 - (3 s - 2 y)^2} y - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} +$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 + 4 \cot^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 4 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 2 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 3 s \sqrt{4r^2 - (3s - 2y)^2} - s \sqrt{4r^2 - (s+2y)^2} - 2 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right)r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)^2$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2x)^2$$

$$2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2y)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2y) \ge 4r$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} < 4r^2\right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s)}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2)} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

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$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2$$

$$\frac{1}{8} \left[8 \cos^{-1} \left(\frac{2^{-x}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{2^{+y}}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4sy - 8xy - 6s\sqrt{4r^2 - (3s-2x)^2} + 5\sqrt{4r^2 - (s+2x)^2} + 2x\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2} \right]$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4 r^2 - (3 s - 2x)^2} x + 4 s y + 8 x y - 6 s \sqrt{4 r^2 - (3 s - 2x)^2} + 5 \sqrt{4 r^2 - (s+2x)^2} + 2 x \sqrt{4 r^2 - (s+2x)^2} - 2 s \sqrt{4 r^2 - (s+2y)^2} - 4 y \sqrt{4 r^2 - (s+2y)^2} \right)$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) < 4r$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 4(s + 2x) r^2 + 4($$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 8 y r - 2 s^2 - 4 s x - 4 s y - 8 x y - 8 x y - 5 \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}}}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \sin^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}}}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \sin^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}}}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \sin^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}}}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4 \cdot x^2 - (s + 2)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s + 2x}{\sqrt{4$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4} r^{2} - (3 s - 2)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4} r^{2} - (s+2x)^{2}} \right) r^{2} + 12 s r + \frac{(s+2x) \left(4y + \sqrt{4} r^{2} - (s+2) \right)}{(s+2x) \sqrt{4} r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4y r + 3 s^{2} + 6 s x \right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4} r^{2} - (s+2x)^{2}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4} r^{2} - (s+2x)^{2} + 2 r^{2} + 2 r^{2}$$

$$8yr - 6s^{2} - 12sx + 4sy + 8xy - s\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 2s\sqrt{4r^{2} - (s+2y)^{2}} - 4y\sqrt{4r^{2} - (s+2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 4 \sin^{-1} \left(\frac{s + 2x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 2r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 3s - 2x + 4r^2 +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 3s - 2x + 4r^2 +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 4r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{s}{2} + \frac{y}{r} \right) r^2 + 8 \cos^$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 2s^2 - 4sx - 4sy - 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y + s\sqrt{4r^2 - (s + 2x)^2} + 2\sqrt{4r^2 - (s + 2x)^2} \right) r^2 + 3r^2 + 3r$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} < 2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} < 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2} (3s-2y) \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)r^2+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+4(s+2x)^2$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)^2$$

$$2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2-(3s-2x)^2} (3s-2y) < 4r^2$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)^2$$

$$2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{s+2x}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{4r^2 - (s+2x)^2}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{1}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2x)^2$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 (\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(x+2x \right) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(x+2x \right) \sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(x+2x \right) \sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

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$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 2s^2 - 4sx - 4sy - 8xy + 4\sqrt{4r^2 - (3s-2y)^2} \quad y - s\sqrt{4r^2 - (s+2x)^2} - 2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (3s-2y)^2} - 2s\sqrt{4r^2 - (s+2y)^2} - 6s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx + 8xy + 3s^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx + 8xy + 3s^2 + 6sx \right) \wedge 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4x + 2x \right) r^2 + 4(s+2x) \left(4x + 2x + 2x + 2x + 2x + 2x + 2x \right) r^2 + 4(s+2x) \left(4x + 2x + 2x + 2x + 2x + 2x + 2x \right) r^2 + 4(s+2x) r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + \frac{s}{2} \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{2} - y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{2} - y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 2$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2} \right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2} \right) r^2 + 4(s + 2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x)$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2}$$

$$2\left(\pi r^2 + (s + 2x)(s + 2y) \right)$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) < 4r$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr +$$

1 --- 1 0 --- 1 2 - 1 1 1 -2 12 -

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4 r^2 - (s + 2 \, x)^2}} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{\sqrt{4 r^2 - (s + 2 \, x)^2}} \right) r^2 - 2 \pi r^2 + 12 \, s \, r - 8 \, y \, r - 6 \, s^2 - 12 \, s \, x + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 4 \, s \, y + 8 \, x \, y + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, y - 6 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, - 2 \, x \, \sqrt{4 \, r^2 - (s + 2 \, x)^2} \, - 6 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, - 2 \, s \, \sqrt{4 \, r^2 - (s + 2 \, y)^2} \, - 4 \, y \, \sqrt{4 \, r^2 - (s + 2 \, y)^2} \right)$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 12 s r + \frac{12 s^{2} + 4 s^{2} + 4 s^{2} + 4 s^{2}}{(s+2x) \left(4 y + \sqrt{4 r^{2} - (s+2x)} \right)} r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4 y r + 3 s^{2} + 6 s x\right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} + 4 r^{2}$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} + 4 r^{2}$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} + 4 r^{2}$$

$$(s+2y) \sqrt{4 r^{2} - (s+2y)^{2}} + 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r + \frac{4sx + 4x + 4y + \sqrt{4 r^{2} - (3s-2x)^{2}}}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r + \frac{4sx + 8xy + 3s \sqrt{4 r^{2} - (3s-2x)^{2}}}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 s r + \frac{4sx + 8xy + 3s \sqrt{4 r^{2} - (3s-2x)^{2}}}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 12 s r + \frac{(s+2x) \left(4 y + \sqrt{4 r^{2} - (s+2x)} \right)}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2x)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24sr - 16yr - 24s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x + 16sy + 3s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + \frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} x + \frac$$

$$(\sqrt{4r^{2}-(s+2x)^{2}})$$

$$(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)}\right)$$

$$2\left(\pi r^{2}+4yr+3s^{2}+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2\left(\pi r^{2}+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^{2}-(3s-2x)^{2}}(3s-2x)\geq 4r$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}\geq 4r^{2}$$

$$\sqrt{4r^{2}-(3s-2y)^{2}}(3s-2y)\geq 4$$

$$(s+2y)\sqrt{4r^{2}-(s+2y)^{2}}\geq 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+$$

$$3s\left(4r+4x+4y+\sqrt{4r^{2}-(3s-2x)^{2}}\right)r^{2}+4sr+$$

$$4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$2\pi r^{2}+6s^{2}+2\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$r^{2}+4sr+$$

$$(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right)r^{2}+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right)r^{2}+4(s+2)$$

$$2\left(\pi r^{2}+4yr+3s^{2}+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}}r^{2}+4(s+2)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}\geq 2\left(\pi r^{2}+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^{2}-(3s-2x)^{2}}(3s-2x)\geq 4r$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}\geq 4r^{2}$$

$$\sqrt{4r^{2}-(3s-2x)^{2}}(3s-2x)\geq 4r$$

$$8 sy - 16 xy + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2}$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 8 s y + 16 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s}{\sqrt{4r^2-(s+2x)^2}} r^2 + 12sr + \frac{(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)}{\sqrt{4r^2-(s+2x)^2}} r^2 + 12sr + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{\sqrt{4r^2-(s+2x)^2}} r^2 + 4(s+2) + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4(s+2) + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4r^2 + \frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4r^2}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4r^2}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4r^2}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4r^2}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{4sr+4x+4y+\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}}} r^2 + 12sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}}} r^2 + 4sr + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}}} r^2 + 4sr + \frac{4sx+4y+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+4y+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx+4y$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \pi r^{2} + 4sr - 4s^{2} + \frac{1}{4}s\sqrt{4r^{2}-(s+2x)^{2}} + \frac{1}{2}x\sqrt{4r^{2}-(s+2x)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy - 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(3s - 2x \right) r^2 + 4(s+2x)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r - 16 y r - 24 s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x + 16 s y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$8yr + 18s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + \frac{1}{4sx + 8xy + 3s} \sqrt{4r^{2} - (3s^{2})^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s - 2x^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 12sr + \frac{1}{4sx + 8xy + 3s^{2} + 6sx}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x^{2})$$

$$2(\pi r^{2} + 4yr + 3s^{2} + 6sx) \wedge \frac{1}{4ta^{2} - (s + 2x)^{2}} r^{2} + 4(s + 2x^{2})$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} r^{2} + 4(s + 2x^{2})$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} r^{2} + 4r^{2}$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} r^{2} + 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + \frac{1}{4sr} r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + \frac{1}{4sx + 8xy + 3s}\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} - (s + 2x)^{2}}$$

$$r^{2} + 4sr + \frac{1}{4s^{2} -$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$\sqrt{4 r^2 - (3 s - 2 x)^2} (3 s - 2 x) < 4 r$$

$$(s+2x) \sqrt{4 r^2 - (s+2x)^2} \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} (3 s - 2 y) \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} (3 s - 2 y) \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 2 x)^2} \right) r^2 + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 12 s r +$$

$$(s + 2x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)^2} \right) r^2 + 4 (s + 2 x) \left(4 x + 3 x \right) r^2 + 4 (s + 2 x) r^2 + 4 (s$$

$$\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \pi r^{2} + 4sr - 4s^{2} - \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2x)^{2}}x + \frac{3}{4}s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \right.$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s)}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 12 s r + (s+2x) \left(4 y + \sqrt{4 r^{2} - (s+2)}\right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} \ge 2 (\pi r^{2} + (s+2x) (s+2y))$$

$$\sqrt{4 r^{2} - (3 s - 2x)^{2}} (3 s - 2x) \ge 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} < 4 r^{2}$$

$$\sqrt{4 r^{2} - (3 s - 2y)^{2}} (3 s - 2y) \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} + 4 s r + 4 r^{2} + 4 r^{$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 8sr +$$

$$16yr - 8s^2 - 2\sqrt{4r^2 - (3s-2x)^2} x -$$

$$16sy + 3s\sqrt{4r^2 - (3s-2x)^2} -$$

$$s\sqrt{4r^2 - (s+2x)^2} - 2x\sqrt{4r^2 - (s+2x)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 16 s y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r+4x+4y+\sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$(s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 + 4sr +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 + 4sr +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 2r^2 + 4sr^2 + 4sr^2 + 2sr^2 + 4sr^2 + 2sr^2 + 4sr^2 + 2sr^2 + 2sr$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 8 s y - 16 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 5 \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s r - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} r - 12 s^2 - 8 s r - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} r - 12 s^2 -$$

$$4 \tan^{-1} \left| \frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right| r^2 + 12 s r + \frac{12 s r}{\sqrt{4r^2-(s+2x)^2}}$$

$$(s+2x) \left(4y + \sqrt{4r^2-(s+2x)} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2-(s+2x)^2}$$

$$2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$\sqrt{4r^2-(3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2-(s+2x)^2} < 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2-(s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2} \right)}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4 s r + \frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{\sqrt{4r^2-(s+2x)^2}} r^2 + 12 s r + \frac{(s+2x)\left(4y+\sqrt{4r^2-(3s-2x)^2} \right)}{\sqrt{4r^2-(s+2x)^2}} r^2 + 4 (s+2)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge 4$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \left(4y + \sqrt{4r^2-(s+2x)^2} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2-(s+2x)^2}} r^2 + 4 (s+2)$$

$$8 s y + 16 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy - 3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

ConditionalExpression {

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - 4x^2)^2} \right)}{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - 4x^2)^2} \right)} r^2 + \frac{4sr + 4sr +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24sr - 16yr - 24s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x + 16sy - 3s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + \frac{2}{3s^2 - 2x^2}$$

$$2\left(\pi r^{2} + 4yr + 3s^{2} + 6sx\right) \wedge 4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right) r^{2} + 4(s+2)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} < 2\left(\pi r^{2} + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^{2}-(3s-2x)^{2}} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^{2}-(s+2y)^{2}} \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right) r^{2} + 3s\left(4r+4x+4y+\sqrt{4r^{2}-(3s-2x)^{2}}\right) r^{2} + 4sr + 4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}\right) r^{2} + 4sr + 4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right) r^{2} + 12sr + 4sr^{2} + 6s^{2} + 2\sqrt{4r^{2}-(3s-2x)^{2}}\right) r^{2} + 12sr + (s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right) r^{2} + 4(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right) r^{2} + 4(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right) r^{2} + 4(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right) r^{2} + 4(s+2x)\left(4x+2x\right)\left(4x+2x\right)\left(4x+2x\right)\left(4x+2x\right) r^{2} + 4(s+2x)\left(4x+2x\right)\left(4x+2x\right)\left(4x+2x\right) r^{2} + 4(s+2x)\left(4x+2x\right) r^{2} + 4(s+2x)\left(4x+2x\right) r^{2} + 4(s+2x)\left(4x+2x\right) r^{2} + 4(s+2x) r^{2$$

$$8 sy - 10 xy - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 12 s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 4tan^{-1})}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2tan^{-1})} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2tan^{-1})} r^2 + 4sr + 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2tan^2)}\right) r^2 + 4(s+2tan^{-1}) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2tan^{-1}) \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4sr + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2tan^2)} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2tan^2)} r^2 + 4sr + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4sr + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4tan^{-1} \left(\frac$$

$$\frac{1}{4} \left(4\cos^{-1}(\frac{2z-y}{r})r^2 + 4\tan^{-1}(\frac{3z-2x}{\sqrt{4r^2-(3s-2x)^2}})r^2 + 4\tan^{-1}(\frac{3z-2x}{\sqrt{4r^2-(3s-2x)^2}})r^2 + 4\tan^{-1}(\frac{3z-2x}{\sqrt{4r^2-(3s-2x)^2}})r^2 - 4\pi r^2 + 16 s r - 16 s^2 - 2\sqrt{4r^2 - (3s-2x)^2} (3s-2x) + 24r^2 + 2x\sqrt{4r^2 - (3s-2x)^2} + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s - 2s)} + 4\tan^{-1}\left(\frac{s+2s}{\sqrt{4r^{2} - (s+2s)^{2}}}\right)r^{2} + 12sr + 4\tan^{-1}\left(\frac{s+2s}{\sqrt{4r^{2} - (s+2s)^{2}}}\right)r^{2} + 12sr + (s+2s)\left(4y + \sqrt{4r^{2} - (s+2s)}\right) + 4(s+2s)\left(\frac{s+2s}{\sqrt{4r^{2} - (s+2s)^{2}}}\right)r^{2} + 4(s+2s)\left(\frac{s+2s}{\sqrt{4r^{2} - (s+2s)^{2}}}\right)r^{2} + 4sr + 4s^{2} - (s+2s)\left(\frac{s+2s}{\sqrt{4r^{2} - (s+2s)^{2}}}\right)r^{2} + 4sr +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s}$$

$$2 \pi r^2 + 6 s^2 + 2 \sqrt{4 r^2 - (3 s - 2 s)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}\right) r^2 + 12 s r + \frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} r^2 + 4 (s+2 s) + \frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} r^2 + 4 (s+2 s) + \frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} r^2 + 4 (s+2 s) + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + 4 (s+2 s) + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + 4 (s+2 s) + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + 4 s r + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + 4 s r + \frac{s+2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} r^2 + 12 s r + \frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} r^2 + 12 s r + \frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} r^2 + 4 (s+2 s) + \frac{s+2x}{\sqrt{4 r^2 - ($$

$$\cos^{-1}\left(\frac{\frac{3s-y}{r}}{r}\right)r^{2} + \tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(3s-2y)^{2}}}\right)r^{2} - \pi r^{2} + 4sr - 4s^{2} + \frac{1}{2}\sqrt{4r^{2}-(3s-2y)^{2}}y - \frac{3}{4}s\sqrt{4r^{2}-(3s-2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

 $(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$ $\sqrt{4r^2 - (3s - 2y)^2}$ (3s - 2y) < 4 $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3s(4r+4x+4y+\sqrt{4r^2-6})$ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2}$ $2(\pi r^2 + (s+2x)(s+2y))$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - 6}\right)$ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r - 16 y r - 24 s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x + 16 s y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3 s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2 x\sqrt{4r^2 - (s + 2x)^2} - 6 s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 4 t + 16 t +$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)} \right)$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)} \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2 (\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4 (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2}$$

$$20 s^{2} + 8 s x - 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x + 8 s y - 16 x y + 4 \sqrt{4 r^{2} - (3 s - 2 y)^{2}} y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 6 s \sqrt{4 r^{2} - (3 s - 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3 s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2 x\sqrt{4r^2 - (s + 2x)^2} - 6 s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 2r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 2r^2 + 4r^2 +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} + 2r^2 + 4r^2 +$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} + 2r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$r^2 + 4sr +$$

$$r^2 + 2r^2 + 6r^2 + 2r^2 + 4r^2 + r^2 + 4r^2 + r^2 + 4r^2 + r^2 + r^2 + 4r^2 + r^2 + r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 8sr + 16yr - 8s^{2} + 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 16sy + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y - 3s\sqrt{4r^{2} - (3s - 2x)^{2}} + s\sqrt{4r^{2} - (s + 2x)^{2}} + 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24sr - 16vr - 24s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x +$$

$$(s + 2x)\left(+y + \sqrt{4r} - (s + 2x)\right)$$

$$2\left(\pi r^{2} + 4yr + 3s^{2} + 6sx\right) \wedge$$

$$4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right) r^{2} + 4\left(s + 2x\right)$$

$$(s + 2x)\sqrt{4r^{2} - (s+2x)^{2}} \ge 2\left(\pi r^{2} + (s+2x)\left(s+2y\right)\right)$$

$$\sqrt{4r^{2} - (3s-2x)^{2}} \left(3s-2x\right) < 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s+2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s-2y)^{2}} \left(3s-2y\right) < 4r$$

$$(s + 2y)\sqrt{4r^{2} - (s+2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}}\right) r^{2} +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s-2x)^{2}}\right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^{2} - (3s-2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s-2x)^{2}}$$

$$r^{2} + 4sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right) r^{2} + 12sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right) r^{2} + 4\left(s + 2x\right)$$

$$2\left(\pi r^{2} + 4yr + 3s^{2} + 6sx\right) \wedge$$

$$4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right) r^{2} + 4\left(s + 2x\right)$$

$$(s + 2x)\sqrt{4r^{2} - (s+2x)^{2}} < 2\left(\pi r^{2} + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^{2} - (3s-2x)^{2}} \left(3s-2x\right) < 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s+2x)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right) r^{2} + 4\left(s+2x\right)$$

$$(s + 2y)\sqrt{4r^{2} - (s+2x)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right) r^{2} + 4r^{2}$$

$$16 s y + 4 \sqrt{4 r^2 - (3 s - 2 y)^2} y - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 6 s \sqrt{4 r^2 - (3 s - 2 y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16 s r - 20 s^{2} + 8 s x + 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x + 8 s y - 16 x y + 4 \sqrt{4r^{2} - (3s - 2y)^{2}} y - 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} + s \sqrt{4r^{2} - (s + 2x)^{2}} + 2 x \sqrt{4r^{2} - (s + 2x)^{2}} - 6 s \sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16 s r - 12 s^{2} - 8 s x + 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x - 8 s y + 16 x y + 4 \sqrt{4r^{2} - (3s - 2y)^{2}} y - 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} + s \sqrt{4r^{2} - (s + 2x)^{2}} + 2 x \sqrt{4r^{2} - (s + 2x)^{2}} - 6 s \sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 8sr + 16yr - 8s^{2} - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 16sy + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3s\sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - s\sqrt{4r^{2} - (s +$$

$$(\sqrt{4r^{2}-(s+2x)^{2}})$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} < 2(\pi r^{2}+(s+2x)(s+2y))$$

$$\sqrt{4r^{2}-(3s-2x)^{2}} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) < 4r$$

$$(s+2y)\sqrt{4r^{2}-(s+2y)^{2}} \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} +$$

$$3s\left(4r+4x+4y+\sqrt{4r^{2}-(3s-2x)^{2}}\right)r^{2} + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr +$$

$$4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$2\pi r^{2}+6s^{2}+2\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+12sr +$$

$$(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right)r^{2}+4(s+2x)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2\left(\pi r^{2}+4yr+3s^{2}+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2x)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2\left(\pi r^{2}+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^{2}-(3s-2x)^{2}} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) < 4r^{2}$$

$$\sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y)$$

 $2x\sqrt{4r^2-(s+2x)^2-6s\sqrt{4r^2-(3s-2y)^2}}$

 $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 24 s r - 16 y r - 24 s^{2} - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x + 16 s y + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s\sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6 s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$

 $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2}$ $2(\pi r^2 + (s+2x)(s+2y))$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$ $(s+2x)\sqrt{4r^2-(s+2x)^2}$ < $4r^2$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$ $(s+2y)\,\sqrt{4\,r^2-(s+2\,y)^2}\,\geq 4\,r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3s(4r+4x+4y+\sqrt{4r^2-6})$ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 4r^2)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s)}$ $2 \pi r^2 + 6 s^2 + 2 \sqrt{4 r^2 - (3 s - 2)}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$ $2(\pi r^2 + (s+2x)(s+2y))$

$$\frac{1}{8} \left[8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16 s r - 20 s^{2} + 8 s x - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x + 8 s y - 16 x y + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s\sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 5\sqrt{4r^{2} - (s + 2x)^{2}} - 6 s\sqrt{4r^{2} - (3s - 2y)^{2}} \right]$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) < 4$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2}$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 3s - 2x \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2y) < 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + 4r^{2}$$

$$4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3x}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{x}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s - 2x}{2}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy + 4\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{r$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 12 s r + \frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 12 s r + \frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$2 (\pi r^{2} + 4 y r + 3 s^{2} + 6 s x) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} (3 s - 2x) < 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} (3 s - 2y) < 4 r^{2}$$

$$\sqrt{4 r^{2} - (3 s - 2y)^{2}} (3 s - 2y) < 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}} \right) r^{2} + \frac{3 s \left(4 r + 4x + 4y + \sqrt{4 r^{2} - (3 s - 2x)^{2}} \right)}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}} r^{2} + 4 s r + \frac{4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}}}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}} r^{2} + 4 c s r + \frac{(s+2x) \left(4 y + \sqrt{4 r^{2} - (3 s - 2x)^{2}} \right)}{\sqrt{4 r^{2} - (s+2x)^{2}}} r^{2} + 4 (s+2)$$

$$(s+2x) \left(4 y + \sqrt{4 r^{2} - (s+2x)^{2}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} r^{2} + 4 r^{2}$$

$$\left(\sqrt{4r^2 - (3s - 2x)^2} \right)$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r -$$

$$16 y r - 24 s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x +$$

$$16 s y + 4\sqrt{4r^2 - (3s - 2y)^2} y -$$

$$3 s \sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} -$$

$$2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s-2x}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{s+2x}{2} - y}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - \frac{12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s-2x)^2} x - \frac{8 s y + 16 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y - \frac{3 s \sqrt{4r^2 - (3s-2x)^2} - s \sqrt{4r^2 - (s+2x)^2} - 2x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} \right)$$

 $2\sqrt{4r^2 - (3s - 2x)^2} x + 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} -$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\left(s+2\right)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)<4$$

$$(s+2y)\sqrt{4r^2-(s+2y)^2}\geq 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$r^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+4(s+2x)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\right)r^2+4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)\geq 4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}\geq 4r^2$$

$$\sqrt{4r^2-(3s-2x)^2}\left(3s-2x\right)\geq 4r^2$$

$$\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$s\sqrt{4r^2-(s+2y)^2}-2y\sqrt{4r^2-(s+2y)^2}$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^{2} + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}\right)r^{2} - \pi r^{2} + 4sr - 4s^{2} + \frac{1}{4}s\sqrt{4r^{2}-(s+2x)^{2}} + \frac{1}{2}x\sqrt{4r^{2}-(s+2x)^{2}} - \frac{1}{4}s\sqrt{4r^{2}-(s+2y)^{2}} - \frac{1}{2}y\sqrt{4r^{2}-(s+2y)^{2}}$$

$$3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)^{r}+3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)^{r}+4sr+4sr+4sx+3s\sqrt{4r^2-(3s-2x)^2}\right)^{r}+4sr+4sx+4sx+3s\sqrt{4r^2-(3s-2x)^2}\right)^{r}+4sr+4sx+4sx+3s\sqrt{4r^2-(3s-2x)^2}\right)^{r}+4sr+4sx+4sx+3s^2+6sx)\wedge$$

$$4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)^{r}+12sr+4sr+4sx+3s^2+6sx)\wedge$$

$$4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)^{r}+4sr+4sx+4y+\sqrt{4r^2-(s+2x)^2}$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2})^{2}(3s-2x)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}(3s-2x)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}<4r^2$$

$$\sqrt{4r^2-(3s-2x)^2}(3s-2x)<4r$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}>4r^2$$

$$\sqrt{4r^2-(3s-2x)^2}(3s-2y)>4r^2$$

$$4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)^{r}+4sr+4sx+4y+\sqrt{4r^2-(3s-2x)^2}$$

$$4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)^{r}+4sr+4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$2\pi r^2+6s^2+2\sqrt{4r^2-(3s-2x)^2}$$

$$\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^{2} + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}\right)r^{2} - \pi r^{2} + 4sr - 4s^{2} - \frac{1}{2}\sqrt{4r^{2}-(s+2x)^{2}}} + \frac{1}{2}\sqrt{4r^{2}-(3s-2x)^{2}} + \frac{3}{4}s\sqrt{4r^{2}-(3s-2x)^{2}} - \frac{1}{4}s\sqrt{4r^{2}-(s+2y)^{2}} - \frac{1}{2}y\sqrt{4r^{2}-(s+2y)^{2}}$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \\ \cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^{2} + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \pi r^{2} + 4sr - 4s^{2} - \\ \frac{1}{4}s\sqrt{4r^{2}-(s+2y)^{2}} - \frac{1}{2}y\sqrt{4r^{2}-(s+2y)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2 (\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) +$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) +$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 16 s^2 - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 2 \sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 3 s \sqrt{4r^2 - (3s - 2y)^2} - s \sqrt{4r^2 - (s + 2y)^2} - 2 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$8yr + 18s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{3s^{2} - 2x}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}}\right) r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{s^{2} - 2x}{\sqrt{4r^{2} - (s^{2} - 2x)^{2}}}\right) r^{2} + 12sr + (s + 2x)\left(4y + \sqrt{4r^{2} - (s^{2})^{2}}\right) r^{2} + 4(s + 2x^{2})$$

$$4 \tan^{-1} \left(\frac{s^{2} - 2x}{\sqrt{4r^{2} - (s^{2} - 2x)^{2}}}\right) r^{2} + 4(s + 2x^{2})$$

$$(s + 2x)\sqrt{4r^{2} - (s^{2} - 2x)^{2}} r^{2} + 4(s + 2x^{2})$$

$$(s + 2x)\sqrt{4r^{2} - (s^{2} - 2x)^{2}} r^{2} + 4(s^{2} - 2x^{2}) r^{2} r^{2} + 4(s^{2} - 2x^{2}) r^{2} r^{2} + 4(s^{2} - 2x^{2}) r^{2} r^{2}$$

$$\frac{1}{4} \left(4\cos^{-1}(\frac{\frac{5x}{2}-x}{r})r^2 + 4\cos^{-1}(\frac{\frac{3x}{2}-y}{r})r^2 + 4\cos^{-1}(\frac{\frac{3x}{2}-y}{r})r^2 + 4\cos^{-1}(\frac{\frac{5x}{2}-y}{r})r^2 + 4\cos^{-1}(\frac{\frac{5x}{2}-x}{r})r^2 + 4\cos^{-1}(\frac{5x}{2}-x)r^2 + 4\cos^{-1}(\frac{5x}{2}-x)r^2 + 4\cos^{-1}(\frac{5x}{2}-x)r^2 + 4\cos^{-$$

 $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$

 $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{3s}{2}-y}{r}\right)r^{2} + \left(\cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^{2} + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \left(\cos^{-1}\left(\frac{\frac{s+2x}{2}-x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \frac{1}{2}\sqrt{4r^{2}-(3s-2y)^{2}}\right)r^{2} + \frac{1}{4}s\sqrt{4r^{2}-(3s-2y)^{2}} - \frac{3}{4}s\sqrt{4r^{2}-(3s-2y)^{2}} - \frac{1}{4}s\sqrt{4r^{2}-(s+2y)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 8sr +$$

$$16yr - 8s^2 - 2\sqrt{4 r^2 - (3s-2x)^2} x -$$

$$16sy + 3s\sqrt{4r^2 - (3s-2x)^2} +$$

$$s\sqrt{4r^2 - (s+2x)^2} + 2x\sqrt{4r^2 - (s+2x)^2} -$$

$$2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 16 s y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 8 s y - 16 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - \frac{2}{3 s - 2 x} \right)$$

$$(\sqrt{4r^2 - (s+2x)^2})$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2)^2} + 2x\right)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 \left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} + 2x + 2x + 2x$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} + 2x + 2x$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} + 2x$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} + 4r^2$$

$$(s+2y) \sqrt{4r$$

$$8 s y + 16 x y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2} + s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy - 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} - 2s\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s\left(4r+4x+4y+\sqrt{4r^2-(3s-2x)^2}\right)}{s^2 + 4s^2 +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 16 s y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 4 t + 4$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2 (\pi r^2 + (s+2x) (s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s$$

$$s\sqrt{4r^2 - (s+2x)^2 + 2x\sqrt{4r^2 - (s+2x)^2}} - 2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x + 2\sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$8yr + 18s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}}\right) r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s}}{\sqrt{4r^{2} - (3s - 2)^{2}}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s - 2)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right) r^{2} + 12sr + \frac{(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)}\right)}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s+2)$$

$$(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} r^{2} + 4(s+2)$$

$$(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} r^{2} + 4(s+2y)$$

$$\sqrt{4r^{2} - (3s-2x)^{2}} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s-2y)^{2}} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^{2} - (s+2y)^{2}} < 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}}\right) r^{2} + 4sr + \frac{3s(4r+4x+4y+\sqrt{4r^{2} - (3s-2x)^{2}}}{\sqrt{4r^{2} - (3s-2x)^{2}}} r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2} - (3s-2x)^{2}}}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2} - (3s-2x)^{2}}}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4sr + \frac{(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)}\right)}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 12sr + \frac{(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right)}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} r^{2} + 4(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} r^{2} r^{2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}}}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} - 4 \pi r^{2} + 8 s r + 16 y r - 8 s^{2} - 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x - 16 s y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} - 16 s y + 3 s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} \right) r^{2} + 16 r^$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}}}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} - 4 \pi r^{2} + 24 s r - 16 y r - 24 s^{2} - 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x + 16 s y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} - s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} \right)$$

$$2(\pi r^{2} + (s + 2x)(s + 2y))$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4r^{2}$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} < 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}})}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)(4y + \sqrt{4r^{2} - (s + 2x)})}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x)(s + 2y)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} + 4r^{2}\right)$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2y)^{2}}} < 4r^{2}\right)$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2y)^{2}}} < 4r^{2}\right)$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2y)^{2}}} < 4r^{2}\right)$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4sr + r^{2}$$

 $\frac{1}{8}\left[8\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^2+\right]$ $8\cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^2 + 4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 +$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - \frac{1}{2} r^2 + \frac$ $20 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x +$ $8 sy - 16 xy + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$ $s\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(s+2x)^2}$ $2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2}$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s)}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 12 s r + \left(s + 2 x\right) \left(4 y + \sqrt{4 r^{2} - (s+2)}\right)$$

$$2 \left(\pi r^{2} + 4 y r + 3 s^{2} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 4 (s + 2)$$

$$(s + 2 x) \sqrt{4 r^{2} - (s+2x)^{2}} \geq 2 \left(\pi r^{2} + (s+2x)(s+2y)\right)$$

$$\sqrt{4 r^{2} - (3 s - 2 x)^{2}} (3 s - 2 x) \geq 4 r$$

$$(s + 2 x) \sqrt{4 r^{2} - (s+2x)^{2}} < 4 r^{2}$$

$$\sqrt{4 r^{2} - (3 s - 2 y)^{2}} (3 s - 2 y) \geq 4 r$$

$$(s + 2 y) \sqrt{4 r^{2} - (s+2x)^{2}} < 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}}\right) r^{2} +$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^{2} - (3 s - 2 x)^{2}}\right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}}\right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}}\right) r^{2} + 12 s r +$$

$$(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)}\right) r^{2} + 12 s r +$$

$$(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)}\right) r^{2} + 4 (s + 2 x) r^{2} + 4 (s +$$

$$8 \cos^{-1}\left(\frac{\frac{s+y}{r}}{r}\right) r^{2} + 4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right) r^{2} + 4 \tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right) r^{2} - 4\pi r^{2} + 16 s r - 12 s^{2} - 8 s x - 2\sqrt{4r^{2}-(3s-2x)^{2}} x - 8 s y + 16 x y + 3 s \sqrt{4r^{2}-(3s-2x)^{2}} - s \sqrt{4r^{2}-(s+2x)^{2}} - 2x\sqrt{4r^{2}-(s+2x)^{2}} - 2s\sqrt{4r^{2}-(s+2x)^{2}} - 2s\sqrt{4r^{2}-(s+2x)^{2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 8 s r + 16 y r - 8 s^2 + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 16 s y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} - 4 y \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 16 s y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} - x}{r} \right)$$

 $8\cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^2 + 4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 +$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x + 2 \sqrt{4r^2 - (3s-2x)^2} x + 8 s y - 16 x y - 3 s \sqrt{4r^2 - (3s-2x)^2} - s \sqrt{4r^2 - (s+2x)^2} - 2 x \sqrt{4r^2 - (s+2x)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s - 2x}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4x)^2} \right)}{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4x)^2} \right)} r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4x)^2} \right)}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^2-(3s-2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^2-(s+2x)^2}} r^2 + 12sr + \frac{(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2} \right)}{\sqrt{4r^2-(s+2x)^2}} r^2 + 4(s+2) r^2 + 4(s+2) r^2 + 4(s+2) r^2 + 4(s+2x) r^2 + 4(s$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s-y}{2}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (3s-2x)^2}} + \frac{16sy + 4\sqrt{4r^2 - (3s-2x)^2}}{\sqrt{4r^2 - (s+2x)^2}} + \frac{1}{2s\sqrt{4r^2 - (s+2x)^2}} - 6s\sqrt{4r^2 - (3s-2y)^2} - 2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8\cos^{-1} \left(\frac{\frac{3s-y}{2}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + \frac{1}{3s\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + \frac{1}{3s\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + \frac{1}{3s\sqrt{4r^2 - (3s-2x)^2}} r^2 + \frac{1}{3s\sqrt{4r^2 - (3s\sqrt{4r^2 - (3s-2x)^2})}} r^2 + \frac{1}{3s\sqrt{4r^2 - (3s\sqrt{4r^2 - (3$$

 $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r -$

 $16yr - 24s^2 - 2\sqrt{4r^2 - (3s - 2x)^2}x + \frac{\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}}x + \frac{\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}}$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(3s - 2x \right) r^2 + 4(s+2x) r^2 + 4(s+2x$$

$$16 s y + 4 \sqrt{4 r^{2} - (3 s - 2 y)^{2}} y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 6 s \sqrt{4 r^{2} - (3 s - 2 y)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{2}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3s-2x)^2} x + 8 s y - 16 x y + 4 \sqrt{4 r^2 - (3s-2y)^2} y + 3 s \sqrt{4 r^2 - (3s-2x)^2} + s \sqrt{4 r^2 - (s+2x)^2} + 2 x \sqrt{4 r^2 - (s+2x)^2} - 6 s \sqrt{4 r^2 - (3s-2y)^2} - 2 s \sqrt{4 r^2 - (s+2y)^2} - 4 y \sqrt{4 r^2 - (s+2y)^2} \right)$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 9y^2)}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 9y^2)} r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 9y^2)} r^2 + 4sr + 4sx^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 9y^2)} r^2 + 12sr + 4sx^2 + 4yr + 3s^2 + 6sx + 2s\sqrt{4r^2 - (s+2x)^2} r^2 + 4(s+2) r^2 + 4(s+2) r^2 + 4(s+2x) r^2 + 4(s+2x)$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{2}{5} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 r^{2} + 4$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 + 2 \sqrt{4r^2 - (3s-2x)^2} x + 16 s y + 4 \sqrt{4r^2 - (3s-2x)^2} y - 3 s \sqrt{4r^2 - (3s-2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{2} \left(8 \cos^{-1} \left(\frac{3s}{2} - x \right) r^2 + 8 \cos^{-1} \left(\frac{3s}{2} - y \right) r^2 + \right)$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s)^2}$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s)^2}$$

$$2 \pi r^2 + 6 s^2 + 2 \sqrt{4 r^2 - (3 s - 2)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2)^2}\right) r^2 + 4 (s+2)$$

$$2 \left(\pi r^2 + 4y r + 3 s^2 + 6 s x\right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}\right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^2 - (s+2x)^2} + 2 r^2 + 4 (s+2y)$$

$$\sqrt{4 r^2 - (3 s - 2x)^2} + (3 s - 2x) < 4 r$$

$$(s+2x) \sqrt{4 r^2 - (s+2x)^2} \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2y)^2} + (3 s - 2y) < 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^2 - (3 s - 2x)^2}}\right) r^2 + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2x)^2} + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2x)^2} + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2x)^2} + 4 t \sin^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^2 - (3 s - 2x)^2}}\right) r^2 + 4 s r + 4 t \sin^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^2 - (3 s - 2x)^2}}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (3 s - 2x)^2}\right) r^2 + 4 (s+2x) \left(4r^2 + (s+2x)(s+2x)\right) r^2 + 4 (s+2x)$$

$$8 \cos^{-1}\left(\frac{s+y}{r}\right) r^{2} + 4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right) r^{2} + 4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right) r^{2} - 4\pi r^{2} + 16 s r - 20 s^{2} + 8 s x + 2 \sqrt{4r^{2}-(3s-2x)^{2}} x + 8 s y - 16 x y + 4 \sqrt{4r^{2}-(3s-2y)^{2}} y - 3 s \sqrt{4r^{2}-(3s-2x)^{2}} + s \sqrt{4r^{2}-(s+2x)^{2}} + 2 x \sqrt{4r^{2}-(s+2x)^{2}} - 6 s \sqrt{4r^{2}-(s+2x)^{2}} - 2 s \sqrt{4r^{2}-(s+2y)^{2}} - 4 y \sqrt{4r^{2}-(s+2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{2}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s-2x)^2} x - 8 s y + 16 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y - 3 s \sqrt{4r^2 - (3s-2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$ $(s+2\,y)\,\sqrt{4\,r^2-(s+2\,y)^2}\,<4\,r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3s(4r+4x+4y+\sqrt{4r^2-6})$ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2}$ $2(\pi r^2 + (s+2x)(s+2y))$ $\sqrt{4r^2 - (3s - 2x)^2}$ (3s - 2x) < 4r $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2}<4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - 6}\right)$ $8 y r + 18 s^2 + 2 \sqrt{4 r^2 - (3 s - 1)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 8sr + 16yr - 8s^{2} - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 16sy + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3s\sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6s\sqrt{4r^{2} - (3s - 2y)^{2}} - 2s\sqrt{4r^{2} - (s + 2y)^{2}} - 4y\sqrt{4r^{2} - (s + 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r + \left(s + 2 x \right) \left(4 y + \sqrt{4r^2 - (s+2x)} \right)$$

$$2 \left(\pi r^2 + 4 y r + 3 s^2 + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \left(s + 2 \right)$$

$$(s + 2 x) \sqrt{4r^2 - (s+2x)^2} \geq$$

$$2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \geq 4r$$

$$(s + 2 x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} \left(3s-2y \right) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4 sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 12 sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 12 sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4 \left(s + 2 \right)$$

$$2 \left(\pi r^2 + 4 y r + 3 s^2 + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \left(s + 2 \right)$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \geq 4r$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \geq 4r$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \geq 4r$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r - 16 y r - 24 s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x + 16 s y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3 s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s+2x)^2} - 2 x\sqrt{4r^2 - (s+2x)^2} - 6 s\sqrt{4r^2 - (s+2y)^2} - 2 s\sqrt{4r^2 - (s+2y)^2} - 4 y\sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4r^2 - (3s-2x)^2} x + 8 s y - 16 x y + 4 \sqrt{4r^2 - (3s-2x)^2} y + 3 s \sqrt{4r^2 - (3s-2x)^2} - s \sqrt{4r^2 - (s+2x)^2} - 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 6 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} r^2 + 4r^2 +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} r^2 + 4r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8$$

$$\frac{1}{8} \left\{ 8\cos^{-1}\left(\frac{\frac{1}{r}+x}{r}\right)r^{2} + 8\cos^{-1}\left(\frac{\frac{1}{r}+x}{r}\right)r^{2} + 4\cos^{-1}\left(\frac{\frac{1}{r}+x}{r}\right)r^{2} + 3\cos^{-1}\left(\frac{\frac{1}{r}+x}{r}\right)r^{2} + 3\cos^{-1}\left(\frac{\frac{1}{r}+x}{r}\right)r$$

$$16 s y + 4 \sqrt{4 r^2 - (3 s - 2 y)^2} y - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 6 s \sqrt{4 r^2 - (s + 2 y)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 s y - 24 s^2 + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 16 s y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y + 4 \sqrt{4r^2 - (3s - 2x)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2y}{2}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s+2x)^2} - \frac{1}{2} \sqrt{4r$$

$$\left(\sqrt{4 \, r^2 - (s + 2 \, x)^2} \, \right)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \ge 2 \left(\pi \, r^2 + (s + 2 \, x) \, (s + 2 \, y) \right)$$

$$\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, \left(3 \, s - 2 \, x \right) < 4 \, r$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} < 4 \, r^2$$

$$\sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, \left(3 \, s - 2 \, y \right) < 4 \, r^2$$

$$\sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, \left(3 \, s - 2 \, y \right) < 4 \, r^2$$

$$4 \tan^{-1} \left(\frac{3 \, s - 2 \, x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 +$$

$$3 \, s \left(4 \, r + 4 \, x + 4 \, y + \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \right) r^2 + 4 \, s \, r +$$

$$4 \, s \, x + 8 \, x \, y + 3 \, s \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}$$

$$4 \, tan^{-1} \left(\frac{3 \, s - 2 \, x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, s \, r +$$

$$(s + 2 \, x) \left(4 \, y + \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \right) r^2 + 12 \, s \, r +$$

$$(s + 2 \, x) \left(4 \, y + \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$2 \, \left(\pi \, r^2 + 4 \, y \, r + 3 \, s^2 + 6 \, s \, x \right) \wedge$$

$$4 \, tan^{-1} \left(\frac{s + 2 \, x}{\sqrt{4 \, r^2 - (s + 2 \, x)^2}} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2 - (s + 2 \, x)^2} \right) r^2 + 4 \, (s + 2 \, x)$$

$$(s + 2 \, x) \sqrt{4 \, r^2$$

$$\frac{1}{8} \left(8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 sr + 8 yr - 26 s^2 + 12 sx - 4\sqrt{4r^2 - (3s - 2x)^2} x - 4 sy - 8 xy + 6 s\sqrt{4r^2 - (3s - 2x)^2} + 2 x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(5x + 2x \right) \sqrt{4r^2 - (s+2x)^2}$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} r^2 + 4(s+2x) r$$

$$\frac{1}{8} \left(8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 4 s y + 8 x y + 6 s \sqrt{4 r^2 - (3 s - 2 x)^2} + 5 \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + 8$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2 x)^{2}}} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2)} \right) r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4y r + 3 s^{2} + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2 x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} < 2 \left(\pi r^{2} + (s+2x) (s+2y) \right)$$

$$\sqrt{4 r^{2} - (3 s - 2 x)^{2}} (3 s - 2 x) < 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} \ge 4 r^{2}$$

$$\sqrt{4 r^{2} - (3 s - 2 y)^{2}} (3 s - 2 y) \ge 4$$

$$(s+2y) \sqrt{4 r^{2} - (s+2y)^{2}} \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r +$$

$$4 s x + 4 x + 4 y + \sqrt{4 r^{2} - (3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3s-2x)^{2}}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)^{2}} \right) r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4 y r + 3 s^{2} + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} \ge 2 (\pi r^{2} + (s+2x) (s+2y))$$

$$\sqrt{4 r^{2} - (3s-2x)^{2}} (3s-2x) \ge 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} < 4 r^{2}$$

$$\left(\sqrt{4 r^2 - (s+2x)^2} \right)$$

$$8 y r - 26 s^2 + 12 s x - 4 \sqrt{4 r^2 - (3 s - 2x)^2} x - 4 s y - 8 x y + 6 s \sqrt{4 r^2 - (3 s - 2x)^2} - s \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 4 s y + 8 x y + 6 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 5 \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} \right)}{3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} \right)} r^{2} + \frac{4sr + 4sr + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{4sx + 4yr + 3s^{2} + 6sx}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) r^{2} + 4(s +$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)^2+4(s+2)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} \geq 2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\frac{1}{8}\left(8\cos^{-1}\left(\frac{s+2x}{r}\right)r^2+8\cos^{-1}\left(\frac{s+2x}{r}\right)r^2+\right)$$

$$8\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2-$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}(3s-2x)<4r$$

$$8\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2-$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}(3s-2x)\geq 4$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(s+2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4sr+$$

$$4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+2sr+$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+4(s+2x)$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$2\left(\pi r^2+4yr+3s^2+6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2}$$

$$2\left(\pi r^2+(s+2x)(s+2y)\right)$$

$$\frac{1}{8}\left(8\cos^{-1}\left(\frac{s+2x}{r}\right)r^2+8\cos^{-1}\left(\frac{s+2x}{r}\right)r^2+4\sin^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 \sqrt{4r^2 - (3s - 2x)^2} x - 4 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^{r^2} + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4t)^2} \right)}{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4t)^2} \right)} r^2 + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^2 - (s + 2t)^2} \right)}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 4(s + 2t) r^2 + 4(s + 2t$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$2 \pi r^2 + 6 s^2 + 2 \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 12 s r +$$

$$(s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)} \right)$$

$$2 \left(\pi r^2 + 4 y r + 3 s^2 + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 4 \left(s + 2 \right)$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2}$$

$$2 \left(\pi r^2 + (s + 2 x) (s + 2 y) \right)$$

$$\sqrt{4 r^2 - (3 s - 2 x)^2} \left(3 s - 2 x \right) < 4 r$$

$$8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 -$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} \left(3 s - 2 y \right) < 2 r^2$$

$$4 \pi^2 - (3 s - 2 y)^2 \left(3 s - 2 y \right) < 2 r^2$$

$$4 \pi^2 - (3 s - 2 y)^2 \left(3 s - 2 y \right) < 2 r^2$$

$$4 \pi^2 - (3 s - 2 y)^2 - (3 s - 2 y)^2 \ge 4 r^2$$

$$4 \pi^2 - (3 s - 2 y)^2 - 6 s \sqrt{4 r^2 - (s + 2 x)^2} +$$

$$4 \pi^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 +$$

$$3 \pi \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (s + 2 x)^2} \right) r^2 +$$

$$3 \pi \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (s + 2 x)^2} \right) r^2 +$$

 $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$

 $2(\pi r^2 + (s + 2x)(s + 2y))$

 $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$

 $\sqrt{4r^2 - (3s - 2y)^2}$ (3s - 2y) < 4

 $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$

 $3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - 6}\right)$

 $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$

 $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$

 $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$

 $(s+2x)\sqrt{4r^2-(s+2x)^2}$

 $8 v r + 18 s^2 + 2 \sqrt{4 r^2 - (3 s - 1)^2}$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (ss - 2x)^2}}}{\sqrt{4r^2 - (ss - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (ss + 2x)^2}}}{\sqrt{4r^2 - (ss + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} + y + s \sqrt{4r^2 - (ss + 2x)^2} + 2 x \sqrt{4r^2 - (ss + 2x)^2} - 6s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2x) + (s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) < 4r + (s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr^2 + (s+2x) \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3z-y}{r}}{r} \right) r^{2} + 8 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} - 6\pi r^{2} + 20 s r + 8 y r - 26 s^{2} + 12 s x - 4 \sqrt{4 r^{2} - (3s-2x)^{2}} x - 4 s y - 8 x y + 4 \sqrt{4 r^{2} - (3s-2x)^{2}} y + 6 s \sqrt{4 r^{2} - (3s-2x)^{2}} - s \sqrt{4 r^{2} - (s+2x)^{2}} - 2 x \sqrt{4 r^{2} - (s+2x)^{2}} - 6 s \sqrt{4 r^{2} - (3s-2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3z-y}{r}}{r} \right) r^{2} + 8 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} - 6\pi r^{2} + 28 s r - 8 y r - 30 s^{2} + 4 s x - 4 \sqrt{4 r^{2} - (3s-2y)^{2}} y + 4 s x y + 8 x y + 4 \sqrt{4 r^{2} - (3s-2y)^{2}} y + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 s x y + 8 x y + 4 \sqrt{4 r^{2} - (3s-2y)^{2}} y + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 s x y + 4 \sqrt{4 r^{2} - (3s-2y)^{2}} y + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 2 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 2 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 2 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 3 \cos^{-1} \left(\frac{s$$

 $6 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} -$

 $2x\sqrt{4r^2-(s+2x)^2}-6s\sqrt{4r^2-(3s-2y)^2}$

$$2(\pi r^{2} + (s + 2x)(s + 2y))$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) < 4$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 12sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right) r^{2} + 4(s + 2x)$$

$$2(\pi r^{2} + 4yr + 3s^{2} + 6sx) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x)$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) < 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right) x^{2} + 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right) x^{2} + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2r)^2} + 4sr^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2r)^2} + 4tan^{-1} \left(\frac{s-2x}{4r^2 - (s+2x)^2}\right) r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s + 2)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s + 2)\left(4r^2 + (s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s + 2)\left(4r^2 + (s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s + 2)\left(4r^2 + (s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s + 2)\left(4r^2 + (s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4tan^{-1} \left(\frac{s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4r^2 + 4\sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4r^2 + 4\sqrt{4r^2 - (3s-2x)^2} r^2 + 4r^2 + 4\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4r^2 + 4$$

$$8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + 4 \sqrt{4 r^2 - (3 s - 2 y)^2} y - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 6 s \sqrt{4 r^2 - (3 s - 2 y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 \sqrt{4r^2 - (3s - 2x)^2} x - 4 s y - 8 x y + 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) < 2$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sr + 4sr + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{4sx + 8xy + 3s^{2} + 6sx}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{4sx + 4y + \sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) r^{2} + \frac{4sx + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) r^{2} + \frac{4sx + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4(s + 2x) r^{2} + \frac{4sx + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sx + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sr + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y + 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s - 2x}{r}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \sin^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \sin^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \sin^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \cos^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \cos^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \cos^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 t \cos^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s r - 4 s y - 8 x y + 4 t \cos^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s r - 4 s y - 8 t \cos^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s r - 4 s y - 8 t \cos^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 8 t \cos^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 t \cos^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 8 t \cos^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r^2 +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2)^2}\right)$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2)^2}\right)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2)$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} < 2(\pi r^2 + (s + 2x)(s + 2y))$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2x)$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 4(s + 2x)$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 2(\pi r^2 + (s + 2x)(s + 2y))$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) < 4r$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4r^2$$

$$\begin{array}{c} s\sqrt{4}r^{2} - (s+2x)^{2} + 2x\sqrt{4}r^{2} - (s+2x)^{2} \\ 2s\sqrt{4}r^{2} - (s+2y)^{2} - 4y\sqrt{4}r^{2} - (s+2y)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{3s\cdot 2x}{\sqrt{4}r^{2} - (s+2y)^{2}}\right)r^{2} + 4ar^{-1}\left(\frac{3s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{3s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{3s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{3s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr + 3rr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}}\right)r^{2} + 4sr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 2sr^{2} + 4(s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 2sr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 2sr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 4rr^{2} - (s+2x)^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 4rr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 4rr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 4rr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} (s+2x)\sqrt{4}r^{2} - (s+2x)^{2} + 4rr^{2} + 4rr^{2} - (s+2x)^{2} \\ \end{array}$$

$$\begin{array}{c} 4\tan^{-1}\left(\frac{3s\cdot 2x}{\sqrt{4}r^{2} - (s+2x)^{2}} + 4rr^{2} + 4rr^{2} - (s+2x)^{2} +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} - 6 \pi r^{2} + 20 s r + 8 y r - 26 s^{2} + 12 s x - 4 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x - 4 s y - 8 x y + 6 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} - s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}}}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 4 s y + 8 x y + 6 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 4 \sin^{-1} \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} +$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 (\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2y) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2} \right) r^2 +$$

$$s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 2s)^2} + 4tr - 4tr -$$

$$\frac{1}{8} \left\{ 8\cos^{-1}\left(\frac{\frac{1-x}{r}}{r}\right)r^{2} + 8\cos^{-1}\left(\frac{\frac{x}{x}+x}{r}\right)r^{2} + 8\cos^{-1}\left(\frac{\frac{x}{x}+y}{r}\right)r^{2} + \\
8\tan^{-1}\left(\frac{3+2x}{\sqrt{4r^{2}-(3x-2x)^{2}}}\right)r^{2} + 4\tan^{-1}\left(\frac{x+2x}{\sqrt{4r^{2}-(3x-2x)^{2}}}\right)r^{2} - \\
6\pir^{2} + 28sr - 8yr - 30s^{2} + 4sx + 4sy + 8xy - \\
s\sqrt{4r^{2}-(s+2x)^{2}} - 2x\sqrt{4r^{2}-(s+2x)^{2}} - \\
2s\sqrt{4r^{2}-(s+2x)^{2}} - 4y\sqrt{4r^{2}-(s+2x)^{2}} - \\
4\tan^{-1}\left(\frac{3+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2y)^{2}} - r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr + \\
4sx + 8xy + 3s\sqrt{4r^{2}-(s+2x)^{2}}r^{2} + 4sr +$$

$$2s\sqrt{4}r^{2} - (s+2y)^{2} - 4y\sqrt{4}r^{2} - (s+2y)^{2}$$

$$4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2s)^{2}}$$

$$4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 12sr + (s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right)r^{2} + 4(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right)r^{2} + 4(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right)r^{2} + 4(s+2x)\left(4r^{2} - (s+2x)^{2} + (s+2x)(s+2y)\right)$$

$$\frac{1}{8}\left(8\cos^{-1}\left(\frac{\frac{s+2x}{2}}{r}\right)r^{2} + 8\tan^{-1}\left(\frac{3s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 4(s+2x)\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 4(s+2x)\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 4(s+2x)\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 4(s+2x)\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 4sy + 8xy + 4\sqrt{4r^{2} - (3s-2x)^{2}} + s\sqrt{4r^{2} - (3s-2x)^{2}} + 4r^{2}$$

$$4sy + 8xy + 4\sqrt{4r^{2} - (3s-2x)^{2}} + s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} +$$

$$8 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4 sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}$$

$$2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}} < 4r^2\right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2y)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (s+2y)^2}\right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$4 \cos^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$4 \cos^{-$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{r}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 \sqrt{4r^2 - (3s-2x)^2} x - 4 s y - 8 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y + 6 s \sqrt{4r^2 - (3s-2x)^2} - s \sqrt{4r^2 - (s+2x)^2} - 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

 $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \right)$

 $8\cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right)r^2 + 8\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 +$

$$4 \tan^{-1} \left[\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right] r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4 r^2 - (3 s - 2x)^2} x + 4 s y + 8 x y + 4 \sqrt{4 r^2 - (3 s - 2y)^2} y + 6 s \sqrt{4 r^2 - (3 s - 2x)^2} - s \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} - 6 s \sqrt{4 r^2 - (s+2x)^2} - 2 s \sqrt{4 r^2 - (s+2y)^2} - 4 y \sqrt{4 r^2 - (s+2y)^2} \right]$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + 2 s \sqrt{4 r^2 - (s + 2 x)^2} + 4 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$2\left(\pi r^{2} + 4yr + 3s^{2} + 6sx\right) \wedge 4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}\right) r^{2} + 4(s+2)$$

$$(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} < 2\left(\pi r^{2} + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^{2} - (3s-2x)^{2}} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^{2} - (s+2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s-2y)^{2}} (3s-2y) < 4$$

$$(s+2y)\sqrt{4r^{2} - (s+2y)^{2}} < 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}}\right) r^{2} + 3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s-2x)^{2}}\right) r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s-2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s-2x)^{2}} r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s-2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s-2x)^{2}} r^{2} + 12sr + (s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)}\right) r^{2} + 4(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)}\right) r^{2} + 4(s+2x)\left(4y + \sqrt{4r^{2} - (s+2x)^{2}}\right) r^{2} + 4(s+2x)\left(4r^{2} + 4yr + 3s^{2} + 6sx\right) \wedge 4r^{2} - (3s-2x)^{2} (3s-2x)^{2} + 4(s+2x)\left(4r^{2} + (s+2x)(s+2y)\right) \sqrt{4r^{2} - (3s-2x)^{2}} (3s-2x)^{2}} r^{2} + 4r^{2} - (3s-2x)^{2} (3s-2x)^{2} r^{2} + 4r^{2} - (3s-2x)^{$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + \frac{1}{8} \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + \frac{1}{8} y r - 14 s^2 - 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - \frac{1}{2} s y + 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + \frac{1}{2} s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 4tan^{-1})}}\right) + 18s^2 + 2\sqrt{4r^2 - (3s - 4tan^{-1})}\right)$$

$$4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2tan^{-1})}\right)$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2tan^{-1})}\right) + 2t^2 + 12sr + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 12sr + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4(s + 2tan^{-1})\right)$$

$$\sqrt{4t^2 - (3s - 2x)^2} + (3s - 2x) + 2tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2 + 4tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) + 2t^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2 - (3s-2x)^2}\right)r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4x+2x\right)\sqrt{4r^2 - (s+2x)^2}$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2x)\left(4x+2x\right)\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(4x+2x\right)\sqrt{4r^2 - (s+2x)^2}$$

$$2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2 - (s+2x)^2}\right)r^2 + 3s$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} \right)$$

$$\frac{1}{8} \left[8 \cos^{-1} \left(\frac{2}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} \right]$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28sr - 8yr - 26s^2 - 4sx + 2\sqrt{4r^2 - (3s - 2x)^2} x + 12sy - 8xy - 3s\sqrt{4r^2 - (3s - 2x)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4r$$

$$(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}} < 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}})}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sr + 4sx + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)(4y + \sqrt{4r^{2} - (s + 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) r^{2} + 4($$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} \right)$$

 $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + \right.$

 $8 \tan^{-1} \left(\frac{s+2x}{\sqrt{1+s^2+28}} \right) r^2 - 6 \pi r^2 + 28 s r - \frac{s+2x}{\sqrt{1+s^2+28}}$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4} r^{2} - (3 s - 2)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4} r^{2} - (s+2x)^{2}} \right) r^{2} + 12 s r + (s+2x) \left(4y + \sqrt{4} r^{2} - (s+2) \right)$$

$$2 \left(\pi r^{2} + 4y r + 3 s^{2} + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4} r^{2} - (s+2x)^{2}} \right) r^{2} + 4 \left(s + 2 \right)$$

$$(s+2x) \sqrt{4} r^{2} - (s+2x)^{2} < 2 \left(\pi r^{2} + (s+2x) (s+2y) \right)$$

$$\sqrt{4} r^{2} - (3 s - 2x)^{2} \left(3 s - 2x \right) < 4 r$$

$$(s+2x) \sqrt{4} r^{2} - (s+2x)^{2} < 4 r^{2}$$

$$\sqrt{4} r^{2} - (3 s - 2y)^{2} \left(3 s - 2y \right) \ge 4$$

$$(s+2y) \sqrt{4} r^{2} - (s+2y)^{2} \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4} r^{2} - (3s-2x)^{2}} \right) r^{2} +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4} r^{2} - (3s - 2x)^{2} \right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4} r^{2} - (3s - 2x)^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4} r^{2} - (3s-2x)^{2}} \right) r^{2} + 4 s r +$$

$$(s+2x) \left(4y + \sqrt{4} r^{2} - (3s-2x)^{2} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4} r^{2} - (s+2x)^{2} \right) r^{2} + 4 \left(s + 2 \right) r^{2$$

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$$8 y r - 26 s^{2} - 4 s x - 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x + 12 s y - 8 x y + 4 \sqrt{4 r^{2} - (3 s - 2 y)^{2}} y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 4 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 6 s \sqrt{4 r^{2} - (3 s - 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$(s+2y)\sqrt{4r^{2}-(s+2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right) r^{2} + \frac{3s\left(4r+4x+4y+\sqrt{4r^{2}-(3s-4x)^{2}}\right)}{\sqrt{4r^{2}-(3s-2x)^{2}}} r^{2} + \frac{3s\left(4r+4x+4y+\sqrt{4r^{2}-(3s-4x)^{2}}\right)}{\sqrt{4r^{2}-(3s-2x)^{2}}} r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}} r^{2} + 12sr + \frac{4sx^{2}+3s^{2}+6s^{2}+2\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}} r^{2} + 12sr + \frac{(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right)}{\sqrt{4r^{2}-(s+2x)^{2}}} r^{2} + 4(s+2x) r^{2} + \frac{4sx^{2}+3s^{2}+6sx}{\sqrt{4r^{2}-(s+2x)^{2}}} r^{2} + 4(s+2x) r^{2} + \frac{4sx^{2}+3s^{2}+6sx}{\sqrt{4r^{2}-(3s-2x)^{2}}} r^{2} + \frac{4sx^{2}+3s^{2}+6sx}{\sqrt{4r^{2}-(3s-2x)^{2}}} r^{2} + \frac{4sx^{2}+3s$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 6 \pi r^2 + 20 s r + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 8 tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 8 tan$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2)}\right)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s + 2)$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2} <$$

$$2 \left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) < 4r$$

$$(s + 2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$$

$$(s + 2y) \sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2$$

$$8 y r - 14 s^{2} - 12 s x + 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x - 12 s y + 8 x y + 4 \sqrt{4 r^{2} - (3 s - 2 y)^{2}} y - 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 4 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 6 s \sqrt{4 r^{2} - (3 s - 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8y r - 26 s^2 - 4s x - 2\sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8x y + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - (3s^2 + 4s^2 + 2)\sqrt{4r^2 - (3s^2 - 2s^2)^2}}\right)r^2 + 4sr + 4sr + 8sy + 3s\sqrt{4r^2 - (3s^2 - 2s^2 + 6s^2 + 2)\sqrt{4r^2 - (3s^2 - 2s^2 - 2s^2)^2}}r^2 + 4sr + 4sr^2 + 6s^2 + 2\sqrt{4r^2 - (3s^2 - 2s^2 - 2s^2 - 2s^2)}r^2 + 12sr + (s + 2s)\left(4y + \sqrt{4r^2 - (s+2s^2 - 2s^2)^2}\right)r^2 + 4(s + 2s^2 - 2$$

 $\sqrt{4 r^2 - (3 s - 2 x)^2}$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 6\pi r^{2} + 20 s r + 8 y r - 14 s^{2} - 12 s x - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 12 s y + 8 x y + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - 6s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8y r - 26 s^2 - 4s x + 2\sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8x y + 4\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} < 2(\pi r^2 + (s + 2x) (s + 2y))$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4r$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 12sr +$$

$$(s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 4(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 4(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 4(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 4(s + 2x) \left(4r^2 - (3s - 2x)^2\right) (3s - 2x) < 4r$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) < 4r$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2 + 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2y)^2}} > 4r^2\right) r^2$$

 $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2s)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2s)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2s)^2} \right) r^2 + 4(s+2s)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2s)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) < 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 4y + \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4sr + 4$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + 2 s \sqrt{4 r^2 - (s + 2 x)^2} + 4 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + 2 s \sqrt{4 r^2 - (s + 2 x)^2} + 4 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} \quad (3s - 2x) \ge 4r$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} \quad (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} < 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4r^{2} \left(\frac$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s - 2s)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 12sr + \frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 12sr + \frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 12sr + \frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s + 2s) + \frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s + 2s) + \frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + 4(s + 2s) + \frac{s+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} r^{2} + 4(s + 2s) + \frac{s+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} r^{2} + 4r^{2} + \frac{s+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} r^{2} + \frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} r^{2} + \frac{s+2x}{\sqrt{4r^$$

$$8 \cos^{-1}\left(\frac{2r}{r}\right) r^{2} + 4 \tan^{-1}\left(\frac{3s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 8 \tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} - 6\pi r^{2} + 20 s r + 8 y r - 14 s^{2} - 12 s x + 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 12 s y + 8 x y - 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} + 2 s \sqrt{4r^{2} - (s + 2x)^{2}} + 4 x \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2y)^{2}} - 4 y \sqrt{4r^{2} - (s + 2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}} < 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}} \right)}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + \frac{4sr + 4sr + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x) \left(4y + \sqrt{4r^{2} - (s + 2x)} \right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) r^{$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{z}{2} + x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 6 \pi r^{2} + 20 s r + 8 y r - 14 s^{2} - 12 s x - 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x - 12 s y + 8 x y + 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2y)^{2}} - 4 y \sqrt{4r^{2} - (s + 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (3s -$$

$$(\sqrt{r})^{-(3+2x)} f$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2)}\right)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r$$

$$8yr - 26s^{2} - 4sx + 2\sqrt{4r^{2} - (3s - 2x)^{2}}x + 12sy - 8xy - 3s\sqrt{4r^{2} - (3s - 2x)^{2}} - 2s\sqrt{4r^{2} - (s + 2y)^{2}} - 4y\sqrt{4r^{2} - (s + 2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$4 \tan^{-1} \left[\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right] r^2 + \\
3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s^2 - 4t^2 - (3s^2 - 4t^2 - (3s^2 - 4t^2 - (3s^2 - 2t^2 - 2t^2 - 4t^2 - (3s^2 - 2t^2 - 2t^$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{4r^2 - (3s-2x)^2}}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x - 2 \sqrt{4r^2 - (3s-2x)^2} x + 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y + 3 s \sqrt{4r^2 - (3s-2x)^2} + 2 s \sqrt{4r^2 - (s+2x)^2} + 4 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s-2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + \frac{12 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2}}{2s - 2x + 2} \right) r^2 + \frac{12 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2}}{2s - 2x + 2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} < 2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y) \sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$2tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2\left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + (s+2x)(s+2y))$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 +$$

$$3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 4 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 6 s \sqrt{4 r^{2} - (3 s - 2 y)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s - 2x}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$8yr + 18s^{2} + 2\sqrt{4r^{2} - (3s^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (3s - 2x)^{2}}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s - 2x^{2})^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x^{2})$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4(s + 2x^{2})$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} + 4r^{2}$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} + 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} + (3s - 2y) + 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right) r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}}}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s}{\sqrt{4r^{2} - (3s^{2} - 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (3s^{2} - 2x)^{2}}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)}\right)}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x) + \frac{4sx + 8xy + 3s^{2} + 6sx}{\sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4(s + 2x)^{2}} r^{2} + 4(s + 2x)^{2} r^{2} r^{2} + 4(s + 2x)^{2} r^{2} r$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s-2x)^2} x - 12 s y + 8 x y + 4 \sqrt{4r^2 - (3s-2y)^2} y - 3 s \sqrt{4r^2 - (3s-2x)^2} + 2 s \sqrt{4r^2 - (s+2x)^2} + 4 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (s+2x)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$\sqrt{4 r^2 - (3 s - 2 x)^2} (3 s - 2 x) < 4 r$$

$$(s+2x) \sqrt{4 r^2 - (s+2x)^2} \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} (3 s - 2 y) < 4 r^2$$

$$(s+2y) \sqrt{4 r^2 - (s+2y)^2} < 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 2 x)^2} \right) r^2 + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 12 s r +$$

$$(s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)} \right)$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 4 (s + 2 x)$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} < 2 (\pi r^2 + (s + 2 x) (s + 2 y))$$

$$\sqrt{4 r^2 - (3 s - 2 x)^2} (3 s - 2 x) \ge 4 r$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} < 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 x)^2} (3 s - 2 y) < 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 4 s r +$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (s + 2 x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{z}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3z}{2} - y}{r} \right) r^2 + \frac{\sqrt{2z}}{r} \right) r^2 + \frac{\sqrt{2z}}{r} \left(\frac{\frac{z}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3z - 2x}{\sqrt{4r^2 - (3z - 2x)^2}} \right) r^2 + \frac{\sqrt{2z}}{r} \left(\frac{z + 2x}{\sqrt{4r^2 - (z + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + \frac{2z}{r} r^2 + 20 s r^2 + 20 s r + \frac{2z}{r} r^2 + 20 s r$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s)}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 12 s r + \left(s+2x\right) \left(4y+\sqrt{4 r^{2} - (s+2)}\right)$$

$$(s+2x) \left(4y+\sqrt{4 r^{2} - (s+2)}\right)$$

$$2 \left(\pi r^{2} + 4y r + 3 s^{2} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} < 2 (\pi r^{2} + (s+2x)(s+2y))$$

$$\sqrt{4 r^{2} - (3 s - 2x)^{2}} (3 s - 2x) \ge 4 r$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} < 4 r^{2}$$

$$\sqrt{4 r^{2} - (3 s - 2y)^{2}} (3 s - 2y) < 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} +$$

$$3 s \left(4 r + 4x + 4y + \sqrt{4 r^{2} - (3 s - 2x)^{2}}\right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (3 s - 2x)^{2}}\right) r^{2} + 4 (s+2)$$

$$2 \left(\pi r^{2} + 4 y r + 3 s^{2} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s+2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x\right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s+2)$$

$$(s+2x) \sqrt{4 r^{2} - (s + 2x)^{2}} + 6 s x$$

$$8 \cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right) r^{2} + 4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right) r^{2} + 8 \tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}\right) r^{2} - 6\pi r^{2} + 28 s r - 8y r - 26 s^{2} - 4s x + 2\sqrt{4r^{2}-(3s-2x)^{2}} x + 12 s y - 8x y + 4\sqrt{4r^{2}-(3s-2y)^{2}} y - 3s\sqrt{4r^{2}-(3s-2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2y)^{2}} - 2s\sqrt{4r^{2}-(s+2y)^{2}} - 4y\sqrt{4r^{2}-(s+2y)^{2}}\right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} < 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) < 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} < 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right) r^2 + 4(s+2x) r^2 + 4(s+2x)$$

Out[55]//TraditionalForm=

$$\max \left\{0, \ r^2 \cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right) - \sqrt{r^2 - \left(\frac{3s}{2}-x\right)^2} \ \left(\frac{3s}{2}-x\right)\right) + \max \left\{0, \ r^2 \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right) - \left(\frac{s}{2}+x\right)\sqrt{r^2 - \left(\frac{s}{2}+x\right)^2} \right\}$$

$$\max \left\{0, \ r^2 \cos^{-1}\left(\frac{\frac{3s}{2}-y}{r}\right) - \sqrt{r^2 - \left(\frac{3s}{2}-y\right)^2} \ \left(\frac{3s}{2}-y\right)\right) + \max \left\{0, \ r^2 \cos^{-1}\left(\frac{\frac{s}{2}+y}{r}\right) - \left(\frac{s}{2}+y\right)\sqrt{r^2 - \left(\frac{s}{2}+y\right)^2} \right\}$$

$$\max \left\{0, \ \frac{1}{8}\left(-4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 2\pi r^2 + \sqrt{4r^2 - (3s-2x)^2} \ (2x-3s)\right) - \frac{1}{4}\left(2r-3s+2x\right)\left(3s-2y\right)\right) - \max \left\{0, \ \frac{1}{8}\left(-4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 2\pi r^2 + \sqrt{4r^2 - (3s-2x)^2} \ (2x-3s)\right) - \frac{1}{4}\left(2r-3s+2x\right)\left(s+2y\right)\right) - \max \left\{0, \ \frac{1}{8}\left(-4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 2\pi r^2 - (s+2x)\sqrt{4r^2-(s+2x)^2}\right) - \frac{1}{4}\left(2r-s-2x\right)\left(3s-2x\right)\right\}$$

$$\max \left\{0, \ \frac{1}{8}\left(-4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 2\pi r^2 - (s+2x)\sqrt{4r^2-(s+2x)^2}\right) - \frac{1}{4}\left(2r-s-2x\right)\left(3s-2x\right)\right\}\right\}$$

Out[56]//TraditionalForm=

$$\left(\sqrt{4r^2 - (3s - 2x)^2} \left(3s - 2x\right) \ge 4\right)$$

$$\left(s + 2x\right)\sqrt{4r^2 - (s + 2x)^2} \ge \sqrt{4r^2 - (3s - 2y)^2} \left(3s - 2y\right)$$

$$\left(s + 2y\right)\sqrt{4r^2 - (s + 2y)^2} \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 4s$$

$$4sx + 8xy + 3s\sqrt{4r^2 - 3s^2}$$

 $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s^2)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3s\left(4r+4x+4y+\sqrt{4r}\right)$ $2\pi r^2 + 8yr + 18s^2 + 2\sqrt{4}$ $8xy \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right)$ $4(s+2y)r + (s+2x)\sqrt{4}$ $2(\pi r^2 + (s+2x)(s+2y))$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s$ $(s+2x)\left(4y+\sqrt{4r^2-(s)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx)$ $\frac{1}{8} \left(4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + \frac{1}{8} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$ $4 s r + 8 y r - 2 s^2 - 4 s x - 4 s y - 8 x y +$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge 4r^2$ $s\sqrt{4r^2-(s+2x)^2}+2x\sqrt{4r^2-(s+2x)^2}$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$ $3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - 6}\right)$ $8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 3)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx)$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{4 \tan^{-1}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + \frac{2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + \frac{2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \left(3s - 2x \right) \ge \epsilon \cdot \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \left(3s - 2x \right) \ge \epsilon \cdot \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + \frac{4r \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s + 2x)^2} \right) r^2 + 4sr + \frac{4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4sr + \frac{4sx + 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4sr + \frac{4r \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{2r \ge s \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} = \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} \ge \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} = \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} = \frac{4r^2 \land \sqrt{4r^2 - (s + 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} = \frac{4r^2 \land \sqrt{4r^2 -$$

$$8yr - 6s^{2} + 4sx - 2\sqrt{4r^{2} - (3s - 2x)^{2}}x - 12sy + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 8 s r + 16 y r - 8 s^2 - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 16 s y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + 16 s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \frac{1}{8} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 \right) \right)$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} \quad (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^{2} - (s + 2x)^{2}} \ge 4r^{2}$$

$$\sqrt{4r^{2} - (3s - 2y)^{2}} \quad (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right)r^{2} + 3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right)r^{2} + 3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 2x)^{2}}\right)r^{2} + 12sr + (s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right)r^{2} + 12sr + (s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right)r^{2} + 4(s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)^{2}}\right)r^{2} + 4(s + 2x)\left(4x + 2x\right)\sqrt{4r^{2} - (s + 2x)^{2}} \ge 2\left(\pi r^{2} + (s + 2x)(s + 2y)\right)$$

$$2r > s \land$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 12sr +$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)$$

$$2r \ge s \land$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4r^2 - (3s-2x)^2} x - 8 s y + 16 x y + 3 s \sqrt{4r^2 - (3s-2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right)r^2 + 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2x)^2$$

$$\sqrt{4r^2 - (s+2x)^2} \ge 2\left(\pi r^2\right)$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)r^2 +$$

$$2\pi r^2 + 8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$2 r \ge s \land \sqrt{4 r^2 - (3 s - 2 x)^2} \quad (3 s - 2 x) \ge 4$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} \quad (3 s - 2 y) \ge 4$$

$$(s + 2 y) \sqrt{4 r^2 - (s + 2 y)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}}\right) r^2 + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + 4 t \cos^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 1$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 16 s y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\frac{1}{8} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\int_{A r^2 - (3s - 2r)^2}} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r^2 + (3s - 2r)^2} \right) r^2 + \frac{1}{8} \left(\frac{3s - 2x}{r$$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) \wedge 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right) r^2 + 4(s+2x)^2$$

$$\sqrt{4r^2-(s+2x)^2} \ge 2(\pi r^2)^2$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) +$$

$$8 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r -$$

$$8 y r - 26 s^2 - 4 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x +$$

$$12 s y - 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} +$$

$$2 s \sqrt{4r^2 - (s+2x)^2} + 4 x \sqrt{4r^2 - (s+2x)^2}$$

$$\frac{1}{4} \left(4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 8 s r - 12 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} \right) \right)$$

$$\frac{1}{8} \left(8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 4 s y - 8 x y + 6 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$\frac{1}{8} \left(8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \right)$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 12sr + (s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)}\right) r^2$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \land 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2x) + 4$$

$$2 r \ge s \land \sqrt{4 r^2 - (3 s - 2 x)^2} \quad (3 s - 2 x) \ge 4$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 4 r^2$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} \quad (3 s - 2 y) \ge 4$$

$$(s + 2 y) \sqrt{4 r^2 - (s + 2 y)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + (s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)^2}\right) r^2 + 2 r^2$$

$$2 \left(\pi r^2 + 4 y r + 3 s^2 + 6 s x\right)$$

$$2r \ge s \land$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x - 4 \sqrt{4r^2 - (3s-2x)^2} x + 4 s y + 8 x y + 6 s \sqrt{4r^2 - (3s-2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right)$$

$$\frac{1}{4} \left(4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 16 s^2 - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$r^2 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) - \frac{1}{4} (s + 2y) \sqrt{4r^2 - (s + 2y)^2}$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4(s + 2x)^2$$

$$\sqrt{4r^2 - (s + 2x)^2} \ge 2(\pi r^2)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + \frac{3s(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2})}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 12sr + \frac{(s + 2x)(4y + \sqrt{4r^2 - (s + 2x)^2})}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 4(s + 2x) (4y + \sqrt{4r^2 - (s + 2x)^2}) r^2 + 4(s + 2x) (4x + 2x) (4x$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \frac{s}{2} r + 8 \frac{y}{2} r - 2 \frac{s}{2} r - 4 \frac{s}{2} x - 4 \frac{s}{2} y - 8 \frac{x}{2} y + 4 \frac{s}{2} r - (s+2x)^2 + 2 \frac{x}{2} \sqrt{4r^2 - (s+2x)^2} - 2 \frac{s}{2} \sqrt{4r^2 - (s+2x)^2} - 4 \frac{y}{2} \sqrt{4r^2 - (s+2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s+y}{2}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y + 12 s \sqrt{4 r^2 - (s+2x)^2} + 2 x \sqrt{4 r^2 - (s+2x)^2} - 2 s \sqrt{4 r^2 - (s+2y)^2} - 4 y \sqrt{4 r^2 - (s+2y)^2} \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2 + (s+2x)(s+2y))$$

$$2r \ge s \land \sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 3s\left(4r+4x+4y+\sqrt{4r^2 - (3s-2x)^2}\right) r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 12sr + (s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr + (s+2x)\left(4y+\sqrt{4r^2 - (s+2x)^2}\right) r^2 + 12sr + (s+2x)\sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r^2$$

$$2(\pi r^2 + 4yr + 3s^2 + 6sx)$$

$$2r \ge s \land \sqrt{4r^2 - (3s-2x)^2} (3s-2x) \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} (3s-2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx+8xy+3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx+4xy+3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx+4xy+3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr + 4sx+$$

$$\frac{1}{4} \left(4\cos^{-1}\left(\frac{f+y}{r}\right)r^{2} + 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4x^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{1}{4}\left(4\cos^{-1}\left(\frac{f+y}{r}\right)r^{2} + 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4x^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{2\pi r^{2} + 8sr - 4s^{2} - 8sx + s}{s\sqrt{4r^{2}-(s+2x)^{2}} + 2x\sqrt{4r^{2}-(s+2x)^{2}}} - \frac{2r \geq s \wedge \sqrt{4r^{2}-(s+2x)^{2}}}{s\sqrt{4r^{2}-(s+2x)^{2}} + 2x\sqrt{4r^{2}-(s+2x)^{2}}} - \frac{4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + s}{s\sqrt{4r^{2}-(s+2x)^{2}} - 2y\sqrt{4r^{2}-(s+2x)^{2}}}\right) + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2}-(s+2x)^{2}}\right)r^{2} + 4sr + 4xr + 8yr - 6s^{2} + 4sx - 2\sqrt{4r^{2}-(3s-2x)^{2}}} - \frac{4sr + 8yr - 6s^{2} + 4sx - 2\sqrt{4r^{2}-(3s-2x)^{2}}}{2s\sqrt{4r^{2}-(s+2y)^{2}}}\right)r^{2} - 2\pi r^{2} + \frac{4sx^{2} + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}}}{2s\sqrt{4r^{2}-(s+2y)^{2}}} - \frac{3s(4r + 4x + 4y + \sqrt{4r^{2}-(3s-2x)^{2}}}{4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + 4y + \sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \frac{3s(4r + 4x + 4y + \sqrt{4r^{2}-(3s-2x)^{2}})}{4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + 4y + \sqrt{4r^{2}-(3s-2x)^{2}}\right)r^{2} + 4sr + 4y + \sqrt{4r^{2}-(3s-2x)^{2}}}$$

$$\frac{1}{8} \left[8 \cos^{-1} \left(\frac{2}{r} \right) r^{2} + 4 \tan^{-1} \left[\frac{3 - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}} \right] r^{2} + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4 \pi r^{2} + 8 s r + 16 y r - 8 s^{2} - 2 \sqrt{4 r^{2} - (3 s - 2x)^{2}} x - 16 s y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}} + 16 s \sqrt{4 r^{2} - (s + 2x)^{2}} + 2 x \sqrt{4 r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2y)^{2}} \right]$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 8 s y + 16 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + \frac{12sr + (s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right)}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 12sr + \frac{(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2}\right)}{\sqrt{4r^2 - (3s - 2x)^2}} (3s - 2x) \ge 4$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (3s -$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8xy + 3s \sqrt{4r^2 - (3s - 2x)^2} - 2s \sqrt{4r^2 - (s + 2y)^2} - 4y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 8 s y - 16 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} + 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \right)$$

$$2 \pi r^{2} + 8 y r + 18 s^{2} + 2 \sqrt{4 r^{2}} - 2r \ge s \wedge \sqrt{4 r^{2} - (3 s - 2 x)^{2}} \quad (3 s - 2 x) \ge 4 \times (s + 2 x) \sqrt{4 r^{2} - (s + 2 x)^{2}} \ge 4 r^{2} + 2 \times (s + 2 x) \sqrt{4 r^{2} - (3 s - 2 y)^{2}} \quad (3 s - 2 y) \ge 4 \times (s + 2 x) \sqrt{4 r^{2} - (3 s - 2 y)^{2}} \quad (3 s - 2 y) \ge 4 \times (s + 2 x) \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + 4 s r + 4 x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + 4 x + 4 x + 2 x + 4 x + 2 x$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r - 16 y r - 24 s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x + 16 s y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2x \sqrt{4r^2 - (s+2x)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s+y}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s+2 x}{\sqrt{4 r^2 - (s+2 x)^2}}}{\sqrt{4 r^2 - (s+2 x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - \frac{1}{8} y r - 26 s^2 - 4 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + \frac{1}{2} s y - 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + \frac{1}{2} s \sqrt{4 r^2 - (s+2 x)^2} + 4 x \sqrt{4 r^2 - (s+2 x)^2} - \frac{1}{2} s \sqrt{4 r^2 - (s+2 y)^2} - 4 y \sqrt{4 r^2 - (s+2 y)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - \frac{2 \pi r^2 + 8 s r - 12 s^2 + 8 s x - 2}{2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - \frac{1}{2} s \sqrt{4 r^2 - (s+2 y)^2} \right)$$

$$s \sqrt{4 r^2 - (s+2 y)^2} - 2 y \sqrt{4 r^2 - (s+2 y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3 \cdot s - 2 \cdot x}{\sqrt{4 \cdot r^2 - (3 \cdot s - 2 \cdot x)^2}} \right) r^2 + \right)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$4\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right) r^2 + 4(s+2x)$$

$$\sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4\tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)}\right)r^2$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4(s + 2x)\left(s + 2x\right)\sqrt{4r^2 - (s + 2x)^2} \ge 2\left(\pi r^2 + (s + 2x)(s + 2y)\right)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6\pi r^2 + 20 \, sr + \\ 8 \, yr - 26 \, s^2 + 12 \, sx - 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x - \\ 4 \, sy - 8 \, xy + 6 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} + \\ s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - 2 \\ 2 \, s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 4 \, \tan^{-1} \left(\frac{s+2x}{\sqrt{4 \, r^2 - (s+2 \, x)^2}} \right) r^2 + 8 \, \tan^{-1} \left(\frac{s+2x}{\sqrt{4 \, r^2 - (s+2 \, x)^2}} \right) r^2 + \\ 4 \, tan^{-1} \left(\frac{s+2x}{\sqrt{4 \, r^2 - (s+2 \, x)^2}} \right) r^2 - 6 \, \pi \, r^2 + 28 \, sr - \\ 8 \, yr - 30 \, s^2 + 4 \, sx - 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + \\ 4 \, sy + 8 \, xy + 6 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + \\ 4 \, sy + 8 \, xy + 6 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, + \\ s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - 4 \, y \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, s \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - 4 \, y \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 2 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 3 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 3 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 3 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 3 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 3 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} - \\ 3 \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^2 - (s+2 \, x)^2} + 2 \, x \, \sqrt{4 \, r^$$

 $\sqrt{4 r^2 - (3 s - 2 x)^2}$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2s)^2} \\ 2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2s)^2} \\ 4\tan^{-1}\left(\frac{ss^2s}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (sz^2s)^2}\right)r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (sz^2s)^2}\right)r^2 + 4(s + 2s) \\ 2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge \\ 4\tan^{-1}\left(\frac{ss^2s}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 4ta^{-1}\left(\frac{ss^2s}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 - 2\pi r^2 + \\ 2r \ge s \wedge \\ 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (sz^2s)^2} + \\ 2x\sqrt{4r^2 - (sz^2s)^2} - 6s\sqrt{4r^2 - (3s^2 - 2y)^2}$$

$$4 \tan^{-1}\left(\frac{3s^2s}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + \\ 4s^2 + 2s\sqrt{4r^2 - (sz^2s)^2} - 6s\sqrt{4r^2 - (3s^2 - 2y)^2} + \\ 4ta^{-1}\left(\frac{3s^2s}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^2 - (3s^2 - 2y)^2} + 2sr^2 + \\ 4ta^{-1}\left(\frac{3s^2s}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^2 - (3s^2 - 2y)^2} + 2sr^2 + \\ (s + 2x)\left(\frac{4y + \sqrt{4r^2 - (3s^2 - 2y)^2}}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 2sr + \\ (s + 2x)\left(\frac{4y + \sqrt{4r^2 - (sz^2s)^2}}{\sqrt{4r^2 - (sz^2s)^2}}\right)r^2 + 2sr^2 + \\ (s + 2x)\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2sr^2 + \\ (s + 2x)\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2sr^2 + \\ (s + 2x)\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2sr^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2sr^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2sr^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2r^2 + 2r^2 + \\ 2r + 2sr\sqrt{4r^2 - (sz^2s)^2} + 2r^2 + 2r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (s + 2x)^2} + 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)} \right)$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \left(s + 2 \right)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \geq 2 \left(\pi r^2 + (s+2x) (s+2y) \right)$$

$$2 r \geq s \wedge$$

$$\sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right)^2 \geq 4 r^2$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \geq 4 r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 12 s r +$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \left(3s-2x \right) \geq 4 r^2$$

$$(s+2y) \sqrt{4r^2 - (s+2x)^2} \geq 4 r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3z-2x}{4}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3z-2x}{\sqrt{4z^2-(s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3z-2x}{4}}{\sqrt{4z^2-(s-2x)^2}} \right) r^2 - 6 \pi r^2 + 20 \, sr + \\ 8 \, yr - 14 \, s^2 - 12 \, sx - 2 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x - \\ 12 \, sy + 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, y + \\ 3 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} + 2 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, y + \\ 4 \, x \, \sqrt{4 \, r^2 - (s + 2 \, x)^2} - 6 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} \, y + \\ 4 \, x \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} + 2 \, s \, \sqrt{4 \, r^2 - (3 \, s - 2 \, y)^2} + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 - \\ 2 \, \pi^2 + 12 \, s \, r - 8 \, y \, r - 18 \, s^2 + 12 \, s \, x - \\ 2 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 8 \, xy + 4 \, \sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2} \, x + 12 \, s \, y - \\ 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2 \, x)^2}} \right) r^2 + 4 \, tan^{-1} \left(\frac{3z-2x}{\sqrt{4 \, r^2 - (3 \, s - 2$$

 $3 s \sqrt{4 r^2 - (3 s - 2 x)^2} + s \sqrt{4 r^2 - (s + 2 x)^2} +$

$$2x\sqrt{4\,r^2-(s+2x)^2}-6\,s\,\sqrt{4\,r^2-(3\,s-2\,y)^2} \\ = 4\tan^{-1}\left(\frac{s^2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s^2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4\,$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge 4 \tan^{-1}\left(\frac{s^2 2x}{\sqrt{4s^2 - (s^2 2s)^2}}\right) r^2 + 4\left(s + 2\right) + 4\left(s + 2\right)$$

 $(s+2x)(4y+\sqrt{4r^2}-(s+2))$

$$s\sqrt{4r^2-(s+2y)^2}-2y\sqrt{4r^2-(s+2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 2 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 2 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}} \right) r^2 + r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + r^2 + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + r^2$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4 sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 12sr +$$

$$(s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) +$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} r^2 + 4(s+2x) +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2} r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{r^2} \right) r^2 - 2\pi r^2 + 8sr - 4 s^2 - 8sx + 2\sqrt{4r^2 - (3s - 2y)^2} y + 5 \sqrt{4r^2 - (s+2x)^2} + 2x\sqrt{4r^2 - (s+2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2} - 5 \sqrt{4r^2 - (s+2y)^2} - 2y\sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 4 \sin^{-1} \left(\frac{3s - 2x}{r} \right) r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{r} \right) r^2 +$$

$$2 r \ge s \land \sqrt{4 r^2 - (3 s - 2 x)^2} \quad (3 s - 2 x) \ge 4$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}}\right) r^2 + \frac{3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 4 x)^2}\right)}{\sqrt{4 r^2 - (3 s - 2 x)^2}} r^2 + 4 s r + \frac{4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}}{\sqrt{4 r^2 - (s + 2 x)^2}} r^2 + 4 (s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 2 \left(\pi r^2 + (s + 2 x) \left(s + 2 x\right) \left(s + 2 x\right) \left(s + 2 x\right)\right) r^2 + 4 (s + 2 x) r^2 + 4 r^2 - 3 r^2 - 3 r^2 + 4 r^2 - 3 r^2 - 3 r^2 + 4 r^2 - 3 r^2 - 3 r^2 - 3 r^2 + 4 r^2 - 3 r^2 - 3 r^2 - 3 r^2 + 4 r^2 - 3 r$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 +$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr +$$

$$4 sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2 \pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + \frac{1}{\sqrt{4r^2 - (3s - 2x)^2}}$$

$$3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 6 s \sqrt{4 r^2 - (3 s - 2 y)^2} - 8 y r + 18 s^2 + 2 \sqrt{4 r^2 - (3 s - 2 y)^2}$$

$$2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2}$$

$$4 \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 12 s r + \frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4 r^2 - (s \cdot 2 \cdot 3)^2}}\right) r^2 + 4 t \tan^{-1} \left(\frac{s \cdot 2 x}{\sqrt{4$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{3 - 2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3 - 2}{4} \frac{3 - 2}{2} \frac{3 - 2}{r} \right) r^$$

$$20s^{2} + 8sx - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x + \\ 8sy - 16xy + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + \\ 3s\sqrt{4r^{2} - (3s - 2x)^{2}} + s\sqrt{4r^{2} - (s + 2x)^{2}} + \\ 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6s\sqrt{4r^{2} - (s + 2x)^{2}} - \\ 2s\sqrt{4r^{2} - (s + 2y)^{2}} - 4y\sqrt{4r^{2} - (s + 2y)^{2}} - \\ 2s\sqrt{4r^{2} - (s + 2y)^{2}} - 4y\sqrt{4r^{2} - (s + 2y)^{2}} - \\ 8\cos^{-1}\left(\frac{\frac{s-y}{r}}{r}\right)r^{2} + 4\tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}\right)r^{2} + 4tan^$$

$$\begin{array}{l} 12\,s^2 + 8\,s\,x - 2\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 2\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2}\,\,y + \\ 3\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,- 3\,s\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2} - \\ s\,\sqrt{4\,r^2 - (s + 2\,y)^2}\,\,- 2\,y\,\sqrt{4\,r^2 - (s + 2\,y)^2} \end{array} \right) \\ = \frac{1}{8}\left\{8\cos^{-1}\left(\frac{\frac{5x}{2}-y}{r}\right)r^2 + 8\tan^{-1}\left(\frac{\frac{3x-2x}{\sqrt{4\,r^2 - (s^2+2y^2)}}}{\sqrt{4\,r^2 - (s^2+2y^2)}}\right)r^2 + 8\tan^{-1}\left(\frac{\frac{3x-2x}{\sqrt{4\,r^2 - (s^2+2y^2)}}}{\sqrt{4\,r^2 - (s^2+2y^2)}}\right)r^2 + 8\tan^{-1}\left(\frac{\frac{3x-2x}{\sqrt{4\,r^2 - (s^2+2y^2)}}}{\sqrt{4\,r^2 - (s^2+2y^2)}}\right)r^2 + \\ 4\tan^{-1}\left(\frac{\frac{x+2x}{\sqrt{4\,r^2 - (s^2+2y^2)}}}{\sqrt{4\,r^2 - (s^2+2y^2)}}\right)r^2 - 6\,\pi\,r^2 + 20\,s\,r + \\ 8\,y\,r - 26\,s^2 + 12\,s\,x - 4\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2}\,\,y + \\ 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2}\,\,r^2 + 8\,\sqrt{4\,r^2 - (s^2+2y)^2} \\ 2\,s\,\sqrt{4\,r^2 - (s^2+2x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s^2+2x)^2} + \\ 2\,x\,\sqrt{4\,r^2 - (s^2+2x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s^2+2x)^2} \\ 8\,\cos^{-1}\left(\frac{\frac{5x-y}{2}}{r}\right)r^2 + 8\,\tan^{-1}\left(\frac{3x-2x}{\sqrt{4\,r^2 - (s^2+2x)^2}}\right)r^2 + \\ 4\,\tan^{-1}\left(\frac{3x-2x}{\sqrt{4\,r^2 - (s^2+2x)^2}}\right)r^2 - 6\,\pi\,r^2 + 28\,s\,r - \\ 8\,y\,r - 30\,s^2 + 4\,s\,x - 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 4\,s\,y + 8\,x\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,y + \\ 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,r^2 + 6\,\pi\,r^2 + 28\,s\,r - \\ 8\,y\,r - 30\,s^2 + 4\,s\,x - 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 4\,s\,y + 8\,x\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,y + \\ 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,r^2 + 6\,\pi\,r^2 + 28\,s\,r - \\ 8\,y\,r - 30\,s^2 + 4\,s\,x - 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 4\,s\,y + 8\,x\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,y + \\ 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 4\,s\,y + 8\,x\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} + 2} \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,x + \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2}\,\,- 6\,s\,\sqrt{$$

$$4 \cos^{-1} \left(\frac{z^{2}y}{\sqrt{r^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3z-2x}{\sqrt{4r^{2}-(3z-2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3z-2x}{\sqrt{4r^{2}-(3z-2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3z-2x}{\sqrt{4r^{2}-(3z-2x)^{2}}} \right) r^{2} + 4 \pi r^{2} + 16 s r - 16 s^{2} - 2 \sqrt{4r^{2}-(3s-2x)^{2}} x + 2 \sqrt{4r^{2}-(3s-2x)^{2}} y + 3 s \sqrt{4r^{2}-(3s-2x)^{2}} + s \sqrt{4r^{2}-(s+2x)^{2}} + 2 x \sqrt{4r^{2}-(s+2x)^{2}} - 2 y \sqrt{4r^{2}-(s+2x)^{2}} + 2 x \sqrt{4r^{2}-(s+2x)^{2}} - 2 y \sqrt{4r^{2}-(s+2x)^{2}}$$

$$r^{2} \cos^{-1} \left(\frac{z^{2}x}{r} \right) - \frac{1}{4} (s+2x) \sqrt{4r^{2}-(s+2x)^{2}}$$

$$2r \ge s \wedge \sqrt{4r^{2}-(3s-2x)^{2}} (3s-2x) \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3z-2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4r^{2}-(3s-2x)^{2}} \right) r^{2} + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4r^{2}-(3s-2x)^{2}} \right) r^{2} + 4 s r + 4 s x + 8 x y + 3 s^{2} + 6 s^{2} + 2 \sqrt{4r^{2}-(3s-2x)^{2}} \right) r^{2} + 4 t a r^{-1} \left(\frac{s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 t a r^{-1} \left(\frac{s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}} \right) r^{2} + 4 s r + 4 s x + 8 x y + 3 s^{2} + 6 s x + 2 s x \right) \left(4 y + \sqrt{4r^{2}-(s+2x)^{2}} \right) r^{2} + 4 s r + 4 s x + 8 x y + 3 s^{2} + 6 s x \right) \left(4 t + 3 t + 4 t$$

$$s \sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s - 2x)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s - 2x)^2}} \right)^2 + 4 sr + 4 sr + 8 sr + 3 s \sqrt{4r^2 - (s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s - 2x)^2}} \right)^2 + 4 sr + 4 sr + 8 sr + 3 s \sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s - 2x)^2}} \right)^2 + 4 tar + 4 sr + 8 sr + 3 s \sqrt{4r^2 - (s + 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s - 2x)^2}} \right)^2 + 12 sr + (s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2} \right)^2 + 2 tar + (s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2} \right)^2$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (s + 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (s + 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (s + 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (s + 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr - s \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr + 8 sr + 3 sr \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr + 8 sr + 3 sr \sqrt{4r^2 - (3s - 2x)^2}$$

$$12 sr - 8 yr - 6 s^2 - 12 sr + 4 sr$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + \frac{3s (4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2})}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 2 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 2 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right)^2 + 4 \cos^{-1}$$

 $s\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(s+2x)^2}$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - 12 s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 12 s y + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 12 s y - 2 \pi r^2 + 12 s x - 2 \pi r^2 + 2 \pi r^2 + 12 s x - 2 \pi r^2 + 12 s$$

 $\sqrt{4r^{2}-(3s-2x)^{2}}$ $3s\left(4r+4x+4y+\sqrt{4r^{2}-(3s-2x)^{2}}\right)^{2}$ $8yr+18s^{2}+2\sqrt{4r^{2}-(3s-2x)^{2}}$ $4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+12sr+$ $(s+2x)\left(4y+\sqrt{4r^{2}-(s+2x)^{2}}\right)r^{2}$ $2\left(\pi r^{2}+4yr+3s^{2}+6sx\right)$

 $2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$ $\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$ $(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$ $4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x) \left(\frac{s + 2x}{\sqrt{4r^$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right) r^2 +$$

$$2\pi r^2 + 8yr + 18s^2 + 2\sqrt{4r^2} -$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$8xy + 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x - 2 \sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}} \right) r^2 - 4 \pi r^2 + 24 s r - 16 y r - 24 s^2 - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x + 16 s y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} \right)$$

$$(s+2y)\sqrt{4r^2 - (s+2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4(s+2x)\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2x)\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 12sr + 2x + 2x + 2x + 3s^2 + 6sx$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + 4sr + 8sr + 8sr + 3s\sqrt{4r^2 - (3s}$$

 $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$ $\sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2)$ $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \right)$ $2r \ge s \land$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$ $8 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - \frac{1}{2} r^2 + \frac$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $8 y r - 26 s^2 - 4 s x - 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x +$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $12 sy - 8 xy + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2}$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 - \frac{1}{4} \left(\frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 \right) \right) r^2 + \frac{1}{4} \left(\frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 \right) \right) r^2 + \frac{1}{4} \sin^{-1} \left(\frac{1}{4} \cos^{-1} \cos^{-1} \left(\frac{1}{4} \cos^{-1} \cos^{-1} \left(\frac{1}{4} \cos^{-1} \cos^{-1} \left(\frac{1}{4} \cos^{-1} \cos^{-1}$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$ $2\pi r^{2} + 8sr - 12s^{2} + 8sx - 2\sqrt{4r^{2} - (3s - 2x)^{2}} + 3s\sqrt{4r^{2} - (3s - 2x)^{2}} \sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $s\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(s+2x)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)^2}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$ $2(\pi r^2 + (s+2x)(s+2y))$ $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + \right)$ $\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r +$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $8 y r - 26 s^2 + 12 s x - 4 \sqrt{4 r^2 - (3 s - 2 x)^2} x 4sy - 8xy + 6s\sqrt{4r^2 - (3s - 2x)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $s\sqrt{4r^2-(s+2x)^2}-2x\sqrt{4r^2-(s+2x)^2}$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{c_1 + v}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s + 2x}{\sqrt{4r^2 - (3s + 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 28 s r - 4 s y + 8 x y + 6 s \sqrt{4r^2 - (3s - 2x)^2} \right) r^2 + 4 s y + 8 x y + 6 s \sqrt{4r^2 - (3s - 2x)^2} r^2 + 4 s r + 4 s y + 8 x y + 6 s \sqrt{4r^2 - (3s - 2x)^2} r^2 + 4 s r + 4 s r + 4 s r + 4 s r + 4 s r - 4 s^2 - 4 r^2 - 4 s r + 4 s r + 4 s^2 - 4 r^2 - 4 s r + 4 s^2 - 4 r^2 - 4 s r + 4 s^2 - 4 r^2 - 4 s r + 4 s^2 - 4 r^2 - 4 s r + 4 s^2 - 4 r^2 - 4 r^$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 8 y r - 2 s^2 - 4 s x - 4 s y - 8 x y - s \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} - 2 s \sqrt{4 r^2 - (s+2y)^2} - 2 x \sqrt{4 r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{4r^2 - (s+2x)^2}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y - 8 \sqrt{4r^2 - (s+2x)^2} - 2x \sqrt{4r^2 - (s+2x)^2} - 2 \sqrt{4r^2 - (s+2x)^2} - 2 \sqrt{4r^2 - (s+2x)^2} - 2 \sqrt{4r^2 - (s+2x)^2} \right)$$

$$2 (\pi r^{2} + (s + 2x) (s + 2y))$$

$$2 r \ge s \land \sqrt{4 r^{2} - (3 s - 2x)^{2}} (3 s - 2x) \ge 4$$

$$\sqrt{4 r^{2} - (3 s - 2y)^{2}} (3 s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} + \frac{3s \left(4 r + 4x + 4y + \sqrt{4 r^{2} - (3s - 2x)^{2}}\right)}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4 r^{2} - (s + 2x)^{2}}\right)}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 12sr + \frac{3s(4r + 4y + 4y + \sqrt{4 r^{2} - (3s - 2y)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{3s(4r + 4x + 4y + \sqrt{4 r^{2} - (3s - 2y)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^{2} - (3s - 2x)^{2}}}{\sqrt{4 r^{2} - (3s - 2x)^{2}}} r^{2} + 4sr + \frac{4sx + 8xy + 3s\sqrt{4 r^$$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$

 $2(\pi r^2 + (s+2x)(s+2y))$

(8:2)

$$\cos^{-1}\left(\frac{\frac{2\pi x}{r}}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{2\pi y}{r}}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - s^{2} - 2sx - \\ \frac{1}{4}s\sqrt{4r^{2}-(s+2y)^{2}} - \frac{1}{2}y\sqrt{4r^{2}-(s+2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 2s\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 \cdot s - 2 \cdot x}{\sqrt{4 \cdot r^2 - (3 \cdot s - 2 \cdot x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \sin^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2 - 4 \cdot \pi r^2 + 8 \cdot s \cdot r + 4 \cos^{-1} \left(\frac{s + 2 \cdot x}{\sqrt{4 \cdot r^2 - (s + 2 \cdot x)^2}} \right) r^2$$

$$r \ge s \land \frac{1}{\sqrt{4r^2 - (3s - 2x)^2}} (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 4sr + \frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$2 r \ge s \wedge \sqrt{4 r^{2} - (3 s - 2 x)^{2}} (3 s - 2 x) \ge 4$$

$$\sqrt{4 r^{2} - (3 s - 2 y)^{2}} (3 s - 2 y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}} \right) r^{2} + \frac{3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^{2} - (3 s - 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (3 s - 2 x)^{2}}} r^{2} + 12 s r + \frac{(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 12 s r + \frac{(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 x + 4 x + 4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 x + 4 x + 4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 x + 4 x + 4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 x + 4 x + 4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 x + 4 x + 4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} r^{2} + 4 (s + 2 x) + \frac{(s + 2 x) \left(4 x + 4 x + 4 y + \sqrt{4 r^{2} - (s + 2 x)^{2}}\right)}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} r^{2} r^{2}$$

 $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$

 $2(\pi r^2 + (s+2x)(s+2y))$

$$\begin{array}{lll} 16\,yr-8\,s^2-2\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,\,x-\\ 16\,s\,y+3\,s\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-(s+2\,x)^2}\,-2\,x\,\sqrt{4\,r^2-($$

$$2 s \sqrt{4 r^2 - (s + 2 x)^2} - 4 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x - 2\sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 2s\sqrt{4r^2 - (s +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r - 16 y r - 24 s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x + 16 s y + 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s)}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 12 s r +$$

$$(s + 2x) \left(4 y + \sqrt{4 r^{2} - (s + 2)}\right) r^{2}$$

$$2 \left(\pi r^{2} + 4 y r + 3 s^{2} + 6 s x\right) r^{2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2x)^{2}}}\right) r^{2} + 4 (s + 2)$$

$$(s + 2x) \sqrt{4 r^{2} - (s + 2x)^{2}} \ge 2 \left(\pi r^{2} + (s + 2x) (s + 2y)\right)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 2sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 2sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 2sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 2sr + 2$$

$$\sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$\sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2x)$$

$$(s + 2x)\sqrt{4r^2 - (s + 2x)^2} \ge 2(\pi r^2 + (s + 2x)(s + 2y))$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{z+v}{r} \right) r^2 + \frac{2r \ge s \land \sqrt{4r^2 - (3s - 2s)^2}}{\sqrt{4r^2 - (4s - 2s)^2}} \right) r^2 + \frac{2r \ge s \land \sqrt{4r^2 - (3s - 2s)^2}}{\sqrt{4r^2 - (4s - 2s)^2}} \left(3s - 2s \right) \ge \frac{z}{4} \\ 8 \tan^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (4s - 2s)^2}} \right) r^2 - 6\pi r^2 + 28 s r - \frac{4 \tan^{-1} \left(\frac{3s - 2s}{\sqrt{4r^2 - (4s - 2s)^2}} \right) r^2 + 4 s r + \frac{4s x + 8x y + 3s \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} \\ - 2s \sqrt{4r^2 - (s + 2y)^2} - 4y \sqrt{4r^2 - (s + 2y)^2} \right) \\ \frac{1}{4} \left\{ 4 \cos^{-1} \left(\frac{z+v}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{z+v}{r} \right) r^2 + 8 s r - \frac{2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8 s r - \frac{4t \sin^{-1} \left(\frac{3s - 2s}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 8 s r - \frac{2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} \\ - s \sqrt{4r^2 - (3s - 2x)^2} - 2x \sqrt{4r^2 - (s + 2x)^2} - \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4(s + 2)}{\sqrt{4r^2 - (3s - 2x)^2}} \\ - s \sqrt{4r^2 - (3s - 2x)^2} - 2y \sqrt{4r^2 - (s + 2x)^2} - \frac{2(\pi r^2 + 4y r + 3s^2 + 6sx) \land 4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4(s + 2)}{\sqrt{4r^2 - (3s - 2x)^2}} \\ - \frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{z+v}{r} \right) r^2 + 8 \tan^{-1} \left(\frac{3s - 2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 2t 2s r + \frac{4t \sin^{-1} \left(\frac{s+2s}{\sqrt{4r^2 - (s + 2x)^2$$

$$8 \cos^{-1}\left(\frac{\frac{t}{2}+y}{r}\right)r^{2} + 8 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4s^{2}-(4s-2x)^{2}}}\right)r^{2} + 4 \tan^{-1}\left(\frac{3s-2x}{\sqrt{4s^{2}-(4s-2x)^{2}}}\right)r^{2} + 6 \pi r^{2} + 28 s r - 4 \tan^{-1}\left(\frac{s+2x}{\sqrt{4s^{2}-(4s-2x)^{2}}}\right)r^{2} - 6 \pi r^{2} + 28 s r - 4 \sin^{-1}\left(\frac{s+2x}{\sqrt{4s^{2}-(4s-2x)^{2}}}\right)r^{2} + 4 \left(s+2\right) + 4 \sin^{-1}\left(\frac{s+2x}{\sqrt{4s^{2}-(4s-2x)^{2}}}\right)r^{2} + 4 \left(s+2\right) + 4 \sin^{-1}\left(\frac{s+2x}{\sqrt{4s^{2}-(4s-2x)^{2}}}\right)r^{2} + 4 \sin^{-1}\left(\frac{s+2x}{\sqrt{4s^{2}-(3s-2x)^{2}}}\right)r^{2} + 4 \sin^{-1}\left(\frac{s+2x}{\sqrt{4s^{2}-(3s-2x)^{2}}}\right$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 6s \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}}{\sqrt{4 r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 s y + 8 x y + 4 \sqrt{4 r^2 - (3 s - 2 y)^2} y - s \sqrt{4 r^2 - (s+2x)^2} - 2 x \sqrt{4 r^2 - (s+2x)^2} - 6 s \sqrt{4 r^2 - (3 s - 2 y)^2} \right)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} \ge 2(\pi r^{2} + (s+2x)(s+2y))$$

$$2r \ge s \land \sqrt{4r^{2}-(3s-2x)^{2}} (3s-2x) \ge 4$$

$$(s+2y)\sqrt{4r^{2}-(s+2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + \frac{3s(4r+4x+4y+\sqrt{4r^{2}-(3s-2x)^{2}})}{\sqrt{4r^{2}-(3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 12sr + \frac{(s+2x)(4y+\sqrt{4r^{2}-(s+2x)^{2}})}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 12sr + \frac{3s(4r+4x+4y+\sqrt{4r^{2}-(s+2x)^{2}})}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 12sr + \frac{3s(4r+4x+4y+\sqrt{4r^{2}-(s+2x)^{2}})}{\sqrt{4r^{2}-(3s-2x)^{2}}}r^{2} + 4sr + \frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+4y+\sqrt{4r^{2}-(s+2y)^{2}}}{\sqrt{4r^{2}-(3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(3s-2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 4sr + \frac{4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 4(s+2x)r^{2} + 4(s+2x)r^{2}$$

$$\cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{3s}{2}-y}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - s^{2} - 2sx + \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2y)^{2}} y - \frac{3}{4}s\sqrt{4r^{2}-(3s-2y)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx - 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 +$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)r^2 + 4\sin^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$\sqrt{4r^{2} - (3s - 2x)^{2}} \quad (3s - 2x) \ge 4$$

$$(s + 2y)\sqrt{4r^{2} - (s + 2y)^{2}} \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right)r^{2} + \frac{3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 4x)^{2}}\right)r^{2}}{\sqrt{4r^{2} - (s + 2x)^{2}}}r^{2} + \frac{12sr + 12sr + 12sr$$

$$2 r \ge s \land \sqrt{4 r^2 - (3 s - 2 x)^2} (3 s - 2 x) \ge 4$$

$$(s + 2 y) \sqrt{4 r^2 - (s + 2 y)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$\left(\sqrt{4r^2 - (s+2x)^2} \right)$$

$$16yr - 8s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x -$$

$$16sy + 4\sqrt{4r^2 - (3s - 2y)^2} y +$$

$$3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s+2x)^2} -$$

$$2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16 s r - 12 s^{2} - 8 s x - 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x - 8 s y + 16 x y + 4 \sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 x \sqrt{4r^{2} - (s + 2x)^{2}} - 6 s \sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x - 2 \sqrt{4 r^2 - (3s - 2x)^2} x - 12 s y + 8 x y + 4 \sqrt{4 r^2 - (3s - 2y)^2} y + 3 s \sqrt{4 r^2 - (3s - 2x)^2} - 6 s \sqrt{4 r^2 - (3s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{8} \cos^{-1} \left(\frac{\frac{3s}{2} - y$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12sr - 8yr - 18s^2 + 12sx - 2\sqrt{4r^2 - (3s - 2x)^2} x + \frac{12sx - 2\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + \frac{12sx - 2\sqrt{4r^2 - (3s - 2x)^2}}{\sqrt{4r^2 - (3s - 2x)^2}}$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 4 tan^{-1})} \right)$$

$$4 tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 12 s r + (s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)^2}\right) r^2 + 2 r + (s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)^2}\right) r^2 + 2 r + (s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)^2}\right) r^2 + 2 r + (s + 2 x) r^2 + 3 r^2 + 6 s r^2 + 3 r^2 + 6 r^2 + 3 r^2$$

$$2 r \ge s \land \sqrt{4 r^2 - (3 s - 2 x)^2} \quad (3 s - 2 x) \ge 4$$

$$(s + 2 y) \sqrt{4 r^2 - (s + 2 y)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}}\right) r^2 + 3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 4 x)^2}\right) r^2 + 4 r^2 + 18 r^2 + 2 \sqrt{4 r^2 - (3 s - 4 x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}\right) r^2 + 4 (s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 2 \left(\pi r^2 + (s + 2 x) (s + 2 y)\right)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)r^2 + 2\pi r^2 + 8yr + 18s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4sr +$$

$$12 s y - 8 x y + 4 \sqrt{4 r^2} - (3 s - 2 y)^2 y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 x)^2} - 4 x \sqrt{4 r^2 - (s + 2 x)^2} - 6 s \sqrt{4 r^2 - (3 s - 2 y)^2}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16 s r - 20 s^{2} + 8 s x - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x + 8 s y - 16 x y + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s\sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 2 x\sqrt{4r^{2} - (s + 2x)^{2}} - 6 s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 24 s r - 16 y r - 24 s^{2} - 2\sqrt{4r^{2} - (3s - 2x)^{2}} x + 16 s y + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6 s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s)}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2)}\right)r^2$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right)\wedge$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}$$

$$2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right) r^2 + 2sr +$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2x)^2} \quad (3s - 2x) \ge 4$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 4(s + 2x)$$

$$(s + 2x) \sqrt{4r^2 - (s + 2x)^2} \ge 2(\pi r^2 + (s + 2x))(s + 2x)$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{2x-y}{r}}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(s-2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(s-2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(s-2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(s-2x)^{2}}} \right) r^{2} + 4 \cos^{-1} \left(\frac{\frac{2x-y}{r}}{r} \right) r^{2} + 4 \cos^{-1} \left(\frac{\frac{2x-y}{r}}{r} \right) r^{2} + 4 \cos^{-1} \left(\frac{\frac{2x-y}{r}}{r} \right) r^{2} + 4 \cos^{-1} \left(\frac{2x-y}{r} \right) r^{2} + 4 \cos^{-1} \left(\frac{3s-2x}{r} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}} \right) r^{2} - 2 \pi r^{2} + 8 s r - 4 \cos^{-1} \left(\frac{3s-2x}{r} \right) r^{2} + 4 \cos^{-1} \left(\frac{3s-2x}{r} \right) r^{2} + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(3s-2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{s+2x}{\sqrt{4r^{2}-(s-2x)^{2}}} \right) r^{2} + 4 \sin^{-$$

$$\begin{cases} \cos \left(\frac{1}{r}\right)^{r} + \\ 8\cos^{-1}\left(\frac{\frac{1}{2}-r}{r}\right)r^{2} + 8\tan^{-1}\left(\frac{3x-2x}{\sqrt{4x^{2}-(3x-2x)^{2}}}\right)r^{2} + \\ 4\tan^{-1}\left(\frac{x+2x}{\sqrt{4x^{2}-(4x-2x)^{2}}}\right)r^{2} - 6\pi r^{2} + 28\pi r - \\ 8yr - 30s^{2} + 4sx - 4\sqrt{4r^{2}-(3s-2y)^{2}}y + \\ 6s\sqrt{4r^{2}-(3s-2x)^{2}} - s\sqrt{4r^{2}-(s+2x)^{2}} - \\ 2x\sqrt{4r^{2}-(s+2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2y)^{2}}y + \\ 6s\sqrt{4r^{2}-(3s-2x)^{2}} - s\sqrt{4r^{2}-(s+2x)^{2}} - \\ 2x\sqrt{4r^{2}-(s+2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2y)^{2}} \end{pmatrix} r^{2} + \tan^{-1}\left(\frac{x+2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 2r \ge s \wedge \\ \sqrt{4r^{2}-(s+2x)^{2}} - \sqrt{4r^{2}-(s+2x)^{2}} - 2r + 4sr - 4s^{2} - \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2x)^{2}} - x + \frac{1}{2}\sqrt{4r^{2}-(3s-2y)^{2}}y + \\ \frac{3}{4}s\sqrt{4r^{2}-(3s-2x)^{2}} - \frac{3}{4}s\sqrt{4r^{2}-(3s-2y)^{2}}y + 4\cos^{-1}\left(\frac{\frac{5}{2}+x}{r}\right)r^{2} + 4\cos^{-1}\left(\frac{\frac{5}{2}+x}{r}\right)r^{2} + 4\cos^{-1}\left(\frac{\frac{5}{2}+x}{r}\right)r^{2} + 4\cos^{-1}\left(\frac{\frac{5}{2}+x}{r}\right)r^{2} + 3s\sqrt{4r^{2}-(s+2x)^{2}} - \\ 2x\sqrt{4r^{2}-(s+2x)^{2}} - 3s\sqrt{4r^{2}-(s+2x)^{2}} - 3s\sqrt{4r^{2}-(s+2x)^{2}} - \\ 2x\sqrt{4r^{2}-(s+2x)^{2}} - 2y\sqrt{4r^{2}-(s+2x)^{2}} - 3s\sqrt{4r^{2}-(s+2x)^{2}} - \\ 2x\sqrt{4r^{2}-(s+2x)^{2}} - 2y\sqrt{4r^{2}-(s+2x)^{2}} - 3s\sqrt{4r^{2}-(s+2x)^{2}} - \\ 4\tan^{-1}\left(\frac{3x-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 2sr + \\ 4tan^{-1}\left(\frac{x+2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 2sr + \\ 4tan^{-1}\left(\frac{x+2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 2sr + \\ 4tan^{-1}\left(\frac{x+2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + \\ 4sx + 8xy + 3s\sqrt{4r^{2}-(3s-2x)^{2}} + 2sr + \\ 4tan^{-1}\left(\frac{x+2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2} + 4sr + \\$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 8 y r - 2 s^2 - 4 s x - 4 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - s \sqrt{4r^2 - (s+2x)^2} - 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} - 2 s \sqrt{4r^2 - (s+2y)^2} - 4 y \sqrt{4r^2 - (s+2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2} + y \right) r^2 + 4 \cos^{-1} \left(\frac{s}{2}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + \frac{1}{4} \cos^{-1} \left(\frac$$

$$2(\pi r^{2} + (s + 2x)(s + 2y))$$

$$2r \ge s \land \sqrt{4r^{2} - (3s - 2x)^{2}} (3s - 2x) \ge 4$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}\right)r^{2} + 3s\left(4r + 4x + 4y + \sqrt{4r^{2} - (3s - 4x)^{2}}\right)r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 4x)^{2}}r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}r^{2} + 4sr + 4sx + 8xy + 3s\sqrt{4r^{2} - (3s - 2x)^{2}}r^{2} + 4sr + 4r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s - 2x)^{2}}r^{2} + 12sr + (s + 2x)\left(4y + \sqrt{4r^{2} - (s + 2x)^{2}}r^{2} + 4yr + 3s^{2} + 6sx\right)$$

$$2r \ge s \land \sqrt{4r^{2} - (3s - 2x)^{2}}(3s - 2x) \ge 4$$

$$4\cos^{-1}\left(\frac{1}{r}\right)r^{2} + 4\tan^{-1}\left(\frac{1}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - 2\pi r^{2} + 8sr - 4s^{2} - 8sx + 2\sqrt{4r^{2}-(3s-2y)^{2}}y - 3s\sqrt{4r^{2}-(3s-2y)^{2}} - s\sqrt{4r^{2}-(s+2y)^{2}} - 2y\sqrt{4r^{2}-(s+2y)^{2}}\right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 4r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4r^2 + 4sr + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{s - 2x}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{s - 2x}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 8sr + 16yr - 8s^2 - 2\sqrt{4r^2 - (3s - 2x)^2} x - 16sy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} - 6s\sqrt{4r$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 2 x)^2} \right) r^2 + 4 r^2 - (3 r - 2 x)^2 + 4 r^2 - (3 r - 2 x)^2 + 4 r^2 - (3 r - 2 x)^2 + 4 r^2 - (3 r - 2 x)^2 + 4 r^2 - (3 r - 2 x)^2 + 6 r^2 + 6 r^2 + 2 \sqrt{4 r^2 - (3 r - 2 x)^2} \right) r^2 + 4 r^2 - (3 r - 2 x)^2 + 6 r^2 + 2 \sqrt{4 r^2 - (3 r - 2 x)^2}$$

$$\sqrt{4 r^2 - (3 s - 2 x)^2} (3 s - 2 x) \ge 4$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 +$$

$$3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 4 x)^2} \right) r^2 + 18 s^2 + 2 \sqrt{4 r^2 - (3 s - 4 x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 12 s r +$$

$$(s + 2 x) \left(4 y + \sqrt{4 r^2 - (s + 2 x)^2} \right) r^2 + 12 s r +$$

$$2 \left(\pi r^2 + 4 y r + 3 s^2 + 6 s x \right) \wedge$$

$$4 \tan^{-1} \left(\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 4 (s + 2 x)$$

$$(s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 2 \left(\pi r^2 + (s + 2 x) (s + 2 y) \right)$$

$$\sqrt{4r^2 - (3s - 2x)^2} (3s - 2x) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4x)^2} \right) r^2 + 18s^2 + 2\sqrt{4r^2 - (3s - 4x)^2}$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 + 12sr +$$

$$(s + 2x) \left(4y + \sqrt{4r^2 - (s + 2x)^2} \right) r^2 + 2sr +$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right)$$

$$\begin{array}{l} \frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{2 + y}{r} \right)^2 + 8 \cos^{-1} \left(\frac{2 + y}{r} \right)^2 \right\} \\ \frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{2 + y}{r} \right)^2 + 8 \cos^{-1} \left(\frac{2 + y}{r} \right)^2 \right\} \\ + \left\{ 8 \cos^{-1} \left(\frac{2 + y}{r} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \tan^{-1} \left(\frac{3 + 2 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 2 \cos^{-1} \left(\frac{3 + y}{r} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{r} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{r} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)^2 + 4 \cos^{-1} \left(\frac{3 + y}{\sqrt{4 + x^2 + (y + 2 + y^2)^2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + \right.$$

$$8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \right.$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16 s r - \right.$$

$$20 s^{2} + 8 s x - 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x + 8 s y - 16 x y + 4 \sqrt{4r^{2} - (3s - 2y)^{2}} y + 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 x \sqrt{4r^{2} - (s + 2x)^{2}} - 6 s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 x \sqrt{4r^{2} - (s + 2y)^{2}} - 4 y \sqrt{4r^{2} - (s + 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}} \right) r^{2} - 4\pi r^{2} + 24 s r - 16 y r - 24 s^{2} - 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x + 16 s y + 4 \sqrt{4r^{2} - (3s - 2x)^{2}} y + 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 x \sqrt{4r^{2} - (s + 2x)^{2}} - 6 s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 x \sqrt{4r^{2} - (s + 2x)^{2}} - 6 s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 y \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 2 s \sqrt{4r^{2} - (s + 2x)^{2}} - 4 s \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 3 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 3 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right$$

$$2 \left(\pi r^2 + 4yr + 3s^2 + 6sx \right) \wedge 4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 \left(\pi r^2 + (s+2x)(s+2y) \right)$$

$$2r \ge s \wedge \sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 12sr + 4sr + 4sx + 8xy + 3s^2 + 6sx$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + 4yr + 3s^2 + 6sx)$$

$$2r \ge s \wedge \sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \ge 4$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 4sr + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2x) + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2r \ge s \wedge \sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \ge 4 + 4sx + 8xy + 3s \sqrt{4r^2 - (3s-2x)^2}$$

$$2r \ge s \wedge \sqrt{4r^2 - (3s-2x)^2} \left(3s-2x \right) \ge 4 + 4sx + 4sx + 2sx + 2$$

$$\left(\sqrt{4r^2 - (s+2x)^2} \right) \\ 8yr - 26s^2 - 4sx - 2\sqrt{4r^2 - (3s-2y)^2} \ x + \\ 12sy - 8xy + 4\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 3s\sqrt{4r^2 - (3s-2x)^2} - 6s\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2} \right) \\ \frac{1}{4} \left(4\cos^{-1} \left(\frac{z+x}{r} \right) r^2 + 4\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + \\ 4\cos^{-1} \left(\frac{z+x}{r} \right) r^2 + 4\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 - \\ 2x\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 3s\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 3s\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 3s\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 3s\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 3s\sqrt{4r^2 - (3s-2y)^2} \ y + \\ 3s\sqrt{4r^2 - (s+2x)^2} - 2y\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 2y\sqrt{4r^2 - (s+2x)^2} - \\ 4\tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4(s+2) \right) \\ \frac{1}{8} \left(8\cos^{-1} \left(\frac{z+x}{r} \right) r^2 + 8\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + \\ 4\tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 6s\sqrt{4r^2 - (3s-2x)^2} \ x - \\ 4sy - 8xy + 4\sqrt{4r^2 - (3s-2x)^2} - s\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 4y\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (s+2x)^2} - \\ 2x\sqrt{4r^2 - (s+2x)^2} - 4y\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 4y\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 4y\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 4y\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 4y\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^2 - (s+2x)^2} - \\ 2s\sqrt{4r^2 - (s+$$

$$8yr - 30s^2 + 4sx - 4\sqrt{4r^2 - (3s - 2x)^2} x + 4sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y + 6s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (s + 2x)^2} - 6s\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} - 2s\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} - 4v\sqrt{4r^2 - (s + 2y)^2} - 2v\sqrt{4r^2 - (s + 2x)^2} - 2v\sqrt{4r^2 - (s + 2x)^2} - 2v\sqrt{4r^2 - (s + 2x)^2} - 2v\sqrt{4r^2 - (s + 2y)^2} - 2v\sqrt{4r^2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 r^2 + 4$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - \frac{2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} + 4 s y + 8 x y - 6 s \sqrt{4r^2 - (3s - 2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right)$$

$$\left(\sqrt{4r^{2} - (s+2x)^{2}} \right)$$

$$(s+2x) \sqrt{4r^{2} - (s+2x)^{2}} \ge 2 \left(\pi r^{2} + (s+2x) \left(s+2y \right) \right)$$

$$2r \ge s \wedge (s+2x) \sqrt{4r^{2} - (s+2x)^{2}}$$

$$\sqrt{4r^{2} - (3s-2y)^{2}} (3s-2y) \ge 4$$

$$(s+2y) \sqrt{4r^{2} - (s+2y)^{2}} \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} +$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^{2} - (3s-2x)^{2}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^{2} - (s+2x)^{2}} \right) r^{2} + 12sr +$$

$$(s+2x) \left(4y + \sqrt{4r^{2} - (s+2x)^{2}} \right) r^{2} + 12sr +$$

$$(s+2x) \sqrt{4r^{2} - (s+2x)^{2}} \right) r^{2} + 12sr +$$

$$4sx + 8xy + 3s^{2} + 6sx$$

$$2r \ge s \wedge (s+2x) \sqrt{4r^{2} - (s+2x)^{2}}$$

$$\sqrt{4r^{2} - (3s-2y)^{2}} (3s-2y) \ge 4r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s-2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4sr +$$

$$4sx + 8xy + 3s \sqrt{4r^{2} - (3s-2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2} - (3s-2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^$$

$$\frac{(s+2x)\sqrt{4r^2-(s+2x)^2}}{2\left(\pi r^2+(s+2x)(s+2y)\right)}$$

$$\frac{1}{4}\left(4\cos^{-1}\left(\frac{\frac{x-2x}{r}}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2-\frac{2\pi r^2+8sr-4s^2-8sx+}{2\sqrt{4r^2-(3s-2x)^2}}\right)r^2-\frac{2\pi r^2+8sr-4s^2-8sx+}{2\sqrt{4r^2-(3s-2x)^2}}r^2-\frac{4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2-\sqrt{4r^2-(3s-2y)^2}}{3s-2y)^2}\frac{3s-2y\geq 2}{24r^2}$$

$$s\sqrt{4r^2-(3s-2y)^2}\left(3s-2y\right)\geq 4r^2$$

$$4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2-2\pi r^2+\frac{4sr+4y+\sqrt{4r^2-(3s-2y)^2}}{4sr+8yr-6s^2+4sx+2\sqrt{4r^2-(3s-2x)^2}}\right)r^2-2\pi r^2+\frac{4sr+4y+\sqrt{4r^2-(3s-2y)^2}}{4sr+4y+4y+4r^2-(3s-2y)^2}\frac{3s-2y}{2r^2+6s^2+2\sqrt{4r^2-(3s-2y)^2}}r^2+4sr+\frac{4sx+8xy+3s\sqrt{4r^2-(3s-2x)^2}}{4r^2-(3s-2y)^2}r^2+\frac{4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2+4sr+\frac{4sr+8yr-6s^2+4sx+2\sqrt{4r^2-(3s-2x)^2}}{4r^2-(3s-2y)^2}}r^2+\frac{2r\geq s\wedge(s+2x)\sqrt{4r^2-(s+2x)^2}}{4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+12sr+\frac{(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+12sr+\frac{(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+12sr+\frac{(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+12sr+\frac{(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right)r^2+4(s+2x)}{2(\pi r^2+4yr+3s^2+6sx)\wedge4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x)}r^2+\frac{1}{8}\left(8\cos^{-1}\left(\frac{\frac{2s-x}{r}}{r}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^$$

$$16yr - 8s^{2} + 2\sqrt{4r^{2} - (3s - 2x)^{2}}x - 16sy - 3s\sqrt{4r^{2} - (3s - 2x)^{2}} + s\sqrt{4r^{2} - (s + 2x)^{2}} + 2x\sqrt{4r^{2} - (s + 2x)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 8 s y + 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 16 s y - 3 s \sqrt{4r^2 - (s + 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 12 s y + 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + 2 s \sqrt{4r^2 - (s + 2x)^2} + 4 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2 \pi r^2 + 12 s r - 8 y r - 18 s^2 + 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} \right) \right)$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4t^2)^2} \right)}{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 4t^2)^2} \right)} r^2 + \frac{12s r}{\sqrt{4r^2-(s+2x)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2y)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2y)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2x)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(s+2x)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2y)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2y)^2}} r^2 + \frac{12s r}{\sqrt{4r^2-(3s-2x)^2}} r^$$

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$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16 s r - 20 s^2 + 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 8 s y - 16 x y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 24 s r - 16 y r - 24 s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x + 16 s y - 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

 $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$ $(s+2x)\sqrt{4r^2-(s+2x)^2} \ge$ $2(\pi r^2 + (s + 2x)(s + 2y))$ $2r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2}$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 12 s r +$ $(s+2x)\left(4y+\sqrt{4r^2-(s+2)}\right)$ $2(\pi r^2 + 4yr + 3s^2 + 6sx)$ $2r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2}$ $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$ $(s+2y)\sqrt{4r^2-(s+2y)^2} \ge 4r^2$ $4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 s r +$ $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$ $2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)^2}$ $4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4(s+2)$ $\sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2)$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s-2x}{r}}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2-(s-2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 26 s^2 - 4 s x + 2 \sqrt{4r^2 - (3s-2x)^2} x + 12 s y - 8 x y - 3 s \sqrt{4r^2 - (s+2x)^2} + 4 x \sqrt{4r^2 - (s+2x)^2} \right) \cos^{-1} \left(\frac{\frac{3s-x}{2}}{r} \right) r^2 + \tan^{-1} \left(\frac{\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 - \frac{\frac{sr^2}{2}}{2} + 2 s r - 3 s^2 + 2 s x \right) \cos^{-1} \left(\frac{\frac{s+2x}{2}}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + 8 y r - 26 s^2 + 12 s x - 4 s y - 8 x y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right) \sin^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2-(3s-2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 8 \tan^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s-2x}{2}}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right) \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 2 x \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}} \right) r^2 - 6\pi r^2 + 28 s r - 8 y r - 30 s^2 + 4 s x + 4 s y + 8 x y + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 2 x \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 2 x \sqrt{4r^2 - (s+2x)^2} r^2} r^2 + 2 x \sqrt{4r^2 - (s+2x)^2} r^2 + 2 x \sqrt{4r^2 -$$

$$2 r \ge s \wedge (s+2x) \sqrt{4 r^2 - (s+2x)^2}$$

$$\sqrt{4 r^2 - (3 s - 2 y)^2} (3 s - 2 y) \ge 4$$

$$(s+2y) \sqrt{4 r^2 - (s+2y)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^2 - (3 s - 2x)^2}} \right) r^2 + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2x)^2}$$

$$2 \pi r^2 + 6 s^2 + 2 \sqrt{4 r^2 - (3 s - 2x)^2}$$

$$2 r \ge s \wedge (s+2x) \sqrt{4 r^2 - (s+2x)^2}$$

$$\sqrt{4 r^2 - (3 s - 2y)^2} (3 s - 2y) \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s + 2x)^2} \right) r^2 + 4 (s+2x) \left(4y + \sqrt{4 r^2 - (s + 2x)^2} \right) r^2 + 4 (s+2x) \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(\frac{4y + \sqrt{4 r^2 - (s + 2x)^2}}{\sqrt{4 r^2 - (3 s - 2y)^2}} \right) r^2 + 12 s r + (s+2x) \left(\frac{4y + \sqrt{4 r^2 - (s + 2x)^2}}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(\frac{4y + \sqrt{4 r^2 - (s + 2x)^2}}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(\frac{4y + \sqrt{4 r^2 - (s + 2x)^2}}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(\frac{4y + \sqrt{4 r^2 - (s + 2x)^2}}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 12 s r + (s+2x) \left(\frac{4y + \sqrt{4 r^2 - (s + 2x)^2}}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 4 (s+2x) \left(\frac{3s - 2y}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 + 4 (s+2x) r^2 + 4 (s+2x)$$

$$\begin{array}{lll} & \sqrt{4\,r^2-(s+2\,x)^2} \geq 2\left(\pi\,r^2\right) \\ \cos^{-1}\left(\frac{2s-x}{r}\right)r^2 + \tan^{-1}\left(\frac{3s-2x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right)r^2 + & 2r \geq s \wedge (s+2\,x)\sqrt{4\,r^2-(s+2\,x)^2} \\ & \tan^{-1}\left(\frac{s+2\,x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right)r^2 - \pi\,r^2 + 4\,s\,r - 4\,s^2 + \\ & \left(s+2\,y\right)\sqrt{4\,r^2-(s+2\,y)^2} \geq 4\,r^2 \\ & \frac{1}{4}\,s\,\sqrt{4\,r^2-(s+2\,x)^2} + \frac{1}{2}\,x\,\sqrt{4\,r^2-(s+2\,x)^2} \\ & \frac{1}{4}\,\left(4\cos^{-1}\left(\frac{s-x}{r}\right)r^2 + 4\cos^{-1}\left(\frac{s-y}{r}\right)r^2 + \\ & 2\sqrt{4\,r^2-(3\,s-2\,x)^2} \times 3\,s\,\sqrt{4\,r^2-(3\,s-2\,x)^2} \\ & s\,\sqrt{4\,r^2-(s+2\,y)^2} - 2\,y\,\sqrt{4\,r^2-(s+2\,y)^2} \right) \end{array}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 2r^2 \right)$$

$$4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y - 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} - 2 s \sqrt{4r^2 - (s + 2x)^2} - 4 y \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 4 s r - 4 s^2 - 8 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 3 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} + 2 x \sqrt{4r^2 - (s + 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 y \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + y}{r} \right) r^2 + 2 x \right)$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s)}$$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}}\right) r^{2} + 12 s r + (s+2x) \left(4 y + \sqrt{4 r^{2} - (s+2)}\right)$$

$$2 r \ge s \wedge (s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}$$

$$\sqrt{4 r^{2} - (3 s - 2y)^{2}} (3 s - 2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} + 3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^{2} - (3 s - 2x)^{2}}\right) r^{2} + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3 s - 2x)^{2}}$$

$$4 \tan^{-1} \left(\frac{3 s - 2x}{\sqrt{4 r^{2} - (3 s - 2x)^{2}}}\right) r^{2} + 4 (s + 2x) +$$

 $\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$

$$4 \tan^{-1} \left(\frac{3 \cdot s - 2 \cdot x}{\sqrt{4 \cdot r^2 - (3 \cdot s - 2 \cdot x)^2}} \right) r^2 - 2 \pi r^2 + 4 \cdot s \cdot r +$$

$$8 \cdot y \cdot r - 6 \cdot s^2 + 4 \cdot s \cdot x + 2 \cdot \sqrt{4 \cdot r^2 - (3 \cdot s - 2 \cdot x)^2} \cdot x -$$

$$12 \cdot s \cdot y + 8 \cdot x \cdot y - 3 \cdot s \cdot \sqrt{4 \cdot r^2 - (3 \cdot s - 2 \cdot x)^2} -$$

$$2 \cdot s \cdot \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2} - 4 \cdot y \cdot \sqrt{4 \cdot r^2 - (s + 2 \cdot y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 8s r + 16y r - 8s^{2} + 2\sqrt{4r^{2} - (3s-2x)^{2}} x - 16s y - 3s\sqrt{4r^{2} - (3s-2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 2s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 2s\sqrt{4r^{2} - (s+2y)^{2}} - 4y\sqrt{4r^{2} - (s+2y)^{2}} \right)$$

$$\frac{1}{8} \left(8\cos^{-1} \left(\frac{\frac{3s-x}{2}}{r} \right) r^{2} + 4\tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4\tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 16sr - 12s^{2} - 8sx + 2\sqrt{4r^{2} - (3s-2x)^{2}} x - 8sy + 16xy - 3s\sqrt{4r^{2} - (3s-2x)^{2}} + s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 2x\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 2x\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 2x\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 2s\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 2s\sqrt{4r^{2} - (s+2x)^{2}} - 12s^{2} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 3s\sqrt{4r^{2} - (s+2x)^{2}} - 12s\sqrt{4r^{2} - (s+2x)^{2}} + 3s\sqrt{4r^{2} - (s+2x)^{2}} + 3s\sqrt{4$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\sqrt{4r^{2} - (3s - 2x)^{2}}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 6\pi r^{2} + 20 s r + 3s \left(4r - 2r \right) r^{2} + 8 \left(4r - 2r \right) r^{$$

 $2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2}$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 2\left(\pi r^2 + (s+2x)\left(s+2y\right)\right)$$

$$2r \ge s \wedge (s+2x)\sqrt{4r^2 - (s+2x)^2}$$

$$\sqrt{4r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2}\right)r^2 + 2r^2 + 8yr + 18s^2 + 2\sqrt{4r^2 - (3s-2x)^2}$$

$$20 s^{2} + 8 s x + 2 \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x + 8 s y - 16 x y - 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + s \sqrt{4 r^{2} - (s + 2 x)^{2}} + 2 x \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}} \right]$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}}}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}}}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} - 4 \pi r^{2} + 24 s r - 16 s y - 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} x + 16 s y - 3 s \sqrt{4 r^{2} - (3 s - 2 x)^{2}} + s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 y)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 y)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s + 2x}{2}}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4 r^{2} - (3s - 2 x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4 r^{2} - (s + 2 x)^{2}}}}{\sqrt{4 r^{2} - (s + 2 x)^{2}}} \right) r^{2} - 6 \pi r^{2} + 28 s r - 8 y r - 26 s^{2} - 4 s x + 2 \sqrt{4 r^{2} - (3s - 2 x)^{2}} x + 12 s y - 8 x y - 3 s \sqrt{4 r^{2} - (3s - 2 x)^{2}} + 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 x)^{2}} - 2 s \sqrt{4 r^{2} - (s + 2 x)^{2}} - 4 y \sqrt{4 r^{2} - (s + 2 x)^{2}} \right)$$

$$\cos^{-1} \left(\frac{\frac{3s - 2x}{2}}{r} \right) r^{2} + \cos^{-1} \left(\frac{\frac{s - 2x}{2}}{r^{2}} \right) r^{2} + \cos^{-1} \left(\frac{\frac{3s - 2x}{2}}{r^{2}} \right) r^{2} + \cos^{-1$$

$$2 r \ge s \wedge (s+2x) \sqrt{4 r^2 - (s+2x)^2}$$

$$\sqrt{4 r^2 - (3s-2y)^2} (3s-2y) \ge 4$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^2 - (s+2x)^2}}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + 12 s r + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + (s+2x) \left(4y + \sqrt{4 r^2 - (s+2x)^2}\right) r^2 + (s+2x) r^2$$

$$\frac{4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 (s+2)}{(s+2x)\sqrt{4} + r^2 - (s+2x)^2} }$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s-2x}{r}}{r}\right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 - 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 4 \sin^{-1} \left(\frac{\frac{s+2x}{\sqrt{4} + r^2 - (s+2x)^2}}{\sqrt{4} + r^2 - (s+2x)^2}\right) r^2 + 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2}$$

$$= 2 (\pi r^2 + 4yr + 3s^2 + 6sx)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} r^2 + 4(s+2x)^2 + 4r^2 - (s+2x)^2 + 2r^2 + 4r^2 + 4r^2 - (s+2x)^2} = 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 r \ge s \wedge (s+2x) \sqrt{4r^2 - ($$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{s + 2x}{\sqrt{4 r^2 - (s + 2x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 8 y r - 2 s^2 - 4 s x + 4 \sqrt{4 r^2 - (3 s - 2x)^2} x - 4 s y - 8 x y + 4 \sqrt{4 r^2 - (3 s - 2y)^2} y - 6 s \sqrt{4 r^2 - (3 s - 2x)^2} + s \sqrt{4 r^2 - (s + 2x)^2} + 2 x \sqrt{4 r^2 - (s + 2x)^2} - 6 s \sqrt{4 r^2 - (3 s - 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3s}{2} - y}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 8 y r - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - 6 s \sqrt{4r^2 - (3s - 2x)^2} + s \sqrt{4r^2 - (s+2x)^2} + 2 x \sqrt{4r^2 - (s+2x)^2} - 6 s \sqrt{4r^2 - (3s - 2y)^2} \right)$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s)}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2)}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2)}\right)$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 4(s+2)$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2}$$

$$2(\pi r^2 + (s+2x)(s+2y))$$

$$2r \ge s\wedge (s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2)}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2 - (3s-2)}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2 - (s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (3s-2)}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2 - (s+2x)^2}\right)r^2 + 4sr + (s+2x)\left(4r^2 - (s+2x)^2\right)r^2 + 4sr + (s+2x)\left(4r$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{3z}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{3z}{2} - y}{r} \right) r^2 + 2r \right) \\
4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^2 - (st^2 - x)^2}} \right) r^2 - 2\pi r^2 + 8sr - 4s^2 - 8sx + 2\sqrt{4r^2 - (3s - 2x)^2} x + 2\sqrt{4r^2 - (3s - 2x)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} + s\sqrt{4r^2 - (st + 2x)^2} + 2x\sqrt{4r^2 - (st + 2x)^2} - 3s\sqrt{4r^2 - (3s - 2y)^2} \right) \\
\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3z}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3z}{2} - y}{r} \right) r^2 + 4sr + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 4sr + 2xr + 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} y - 3s\sqrt{4r^2 - (3s - 2x)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} \right)$$

 $\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + \right.$

$$2 \pi r^{2} + 6 s^{2} + 2 \sqrt{4 r^{2} - (3 s - 2)}$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s + 2)$$

$$(s + 2x) \sqrt{4 r^{2} - (s+2x)^{2}} \ge 2 (\pi r^{2} + (s+2x) (s+2y))$$

$$2 r \ge s \wedge (s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}$$

$$(s+2y) \sqrt{4 r^{2} - (s+2y)^{2}} \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4 r^{2} - (3s-2x)^{2}} \right) r^{2} +$$

$$4 \sin^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r +$$

$$4 s x + 8 x y + 3 s \sqrt{4 r^{2} - (3s-2x)^{2}}$$

$$2 r \ge s \wedge (s+2x) \sqrt{4 r^{2} - (s+2x)^{2}}$$

$$(s+2y) \sqrt{4 r^{2} - (s+2y)^{2}} \ge 4 r^{2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4 r^{2} - (3s-2x)^{2}}} \right) r^{2} +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4 r^{2} - (s+2x)^{2}} \right) r^{2} +$$

$$3 s \left(4r + 4x + 4y + \sqrt{4 r^{2} - (s+2x)^{2}} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)^{2}} \right) r^{2} + 12 s r +$$

$$(s+2x) \left(4y + \sqrt{4 r^{2} - (s+2x)^{2}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 (s+2x) \left(\frac{s+2x}{\sqrt{4 r^{2} - (s+2x$$

 $4sx + 8xy + 3s\sqrt{4r^2 - (3s)^2}$

$$8 \cos^{-1}\left(\frac{\frac{1z-y}{2}}{\sqrt{r}}\right) r^{2} + 4 \tan^{-1}\left(\frac{3z-2x}{\sqrt{4x^{2}-(3z-2x)^{2}}}\right) r^{2} + 4 \tan^{-1}\left(\frac{3z-2x}{\sqrt{4x^{2}-(3z-2x)^{2}}}\right) r^{2} + 4 \tan^{-1}\left(\frac{3z-2x}{\sqrt{4x^{2}-(3x-2x)^{2}}}\right) r^{2} + 4 \tan^{-1}\left(\frac{3z-2x}{\sqrt{4x^{2}-$$

$$\begin{array}{lll} 4 \tan^{-1} \left(\frac{s+2s}{\sqrt{4r^2-(3s-2s)^2}} \right) r^2 - 2\pi r^2 + 12sr - \\ 8 yr - 18 s^2 + 12 sy + 2\sqrt{4r^2-(3s-2y)^2} & x + \\ 12 sy - 8 xy + 4\sqrt{4r^2-(3s-2y)^2} & -6 s\sqrt{4r^2-(3s-2y)^2} & y - \\ 3 s\sqrt{4r^2-(3s-2x)^2} - 6 s\sqrt{4r^2-(3s-2y)^2} & y - \\ 4 \tan^{-1} \left(\frac{s+2s}{\sqrt{4r^2-(4s-2s)^2}} \right) r^2 + 4 sr + \\ (s+2x) \left(4y + \sqrt{4r^2-(s+2x)^2} \right) r^2 + 12 sr + \\ (s+2x) \left(4y + \sqrt{4r^2-(s+2x)^2} \right) r^2 + 4 \left(4ta - \frac{s+2s}{\sqrt{4r^2-(4s-2s)^2}} \right) r^2 + 4 \left(4ta - \frac{s+2s}{\sqrt{4r^2-(4s-2s)^2}} \right) r^2 + 4 ta - \frac{s+2s}{\sqrt{4r^2-(4s-2s)^2}} \right) r^2 + 4 ta - \frac{s+2s}{\sqrt{4r^2-(4s-2s)^2}} r^$$

$$\frac{1}{8}\left(8\cos^{-1}\left(\frac{\frac{1}{3}-x}{r}\right)r^{2} + \frac{2r \ge s \land (s+2x)\sqrt{4r^{2}-(s+2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + \frac{2r \ge s \land (s+2x)\sqrt{4r^{2}-(s+2x)^{2}}}{\sqrt{4r^{2}-(s+2x)^{2}}}r^{2} + 4\tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4\tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4\sin^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4\sin^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4\sin^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 2sr - 3s^{2} + 2sr + 4x\sqrt{4r^{2}-(s+2x)^{2}}$$

$$\tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + \frac{3}{4}s\sqrt{4r^{2}-(s+2x)^{2}}$$

$$\tan^{-1}\left(\frac{\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + \frac{3}{4}s\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2r \ge s\wedge (s+2x)\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2r \ge s\wedge (s+2x)\sqrt{4r^{2}-(s+2x)^{2}}$$

$$2\pi r^{2} + 6s^{2} + 2\sqrt{4r^{2}-(s+2x)^{2}}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 12sr + 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} + 4\tan^{-1}\left(\frac{s+$$

$$\begin{array}{l} 4\sqrt{4\,r^2-(3\,s-2\,y)^2}\ y+s\,\sqrt{4\,r^2-(s+2\,x)^2}\ +\\ 2x\,\sqrt{4\,r^2-(s+2\,x)^2}-6\,s\,\sqrt{4\,r^2-(3\,s-2\,y)^2} \end{array}) \\ \cos^{-1}\left(\frac{3z-x}{2}\right)r^2+\cos^{-1}\left(\frac{1z-x}{2}\right)r^2+\tan^{-1}\left(\frac{3z-2x}{\sqrt{4\,r^2-(3\,s-2\,y)^2}}\right)r^2+\\ \tan^{-1}\left(\frac{3z-2x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right)r^2-\pi\,r^2+4\,s\,r-4\,s^2+\\ \frac{1}{2}\,\sqrt{4\,r^2-(s+2\,x)^2}\,\frac{3z}{2}\,s\,\sqrt{4\,r^2-(s+2\,x)^2}+2\,s\,\sqrt{4\,r^2-(s+2\,x)^2}\,\frac{3z}{2}\,s\,\sqrt{4\,r^2-(s+2\,x)^2}+2\,s\,\sqrt{4\,r^2-(s+$$

$$2x\sqrt{4r^2 - (s + 2x)^2} - 6x\sqrt{4r^2 - (3s - 2y)^2} - 2x\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} - 4tan^{-1} \left(\frac{s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 12sr + (s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)^2}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4$$

$$\begin{cases} \sqrt{4r^2 - (3s - 2s)^2} \\ 8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s - 2s)^2} \\ x - 12sy + 8xy + 4\sqrt{4r^2 - (3s - 2y)^2} \\ 3s\sqrt{4r^2 - (3s - 2s)^2} - 6s\sqrt{4r^2 - (3s - 2y)^2} - 4tn^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2s)^2}}\right)r^2 + 12sr + 2s\sqrt{4r^2 - (s+2y)^2} \\ 2s\sqrt{4r^2 - (s+2y)^2} - 4y\sqrt{4r^2 - (s+2y)^2} - 4tn^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2s)^2}}\right)r^2 + 2s\sqrt{4r^2 - (3s - 2s)^2} \\ 2s\sqrt{4r^2 - (s+2x)^2} - 6s\sqrt{4r^2 - (s+2x)^2} + 2s\sqrt{4r^2 - (s+2x)^2} - 2s\sqrt{4r^$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{1}{3} - y}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{1}{3} - y}{r} \right) r^{2} + \right. \\
\left. 8 \cos^{-1} \left(\frac{\frac{1}{3} - y}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3r - 2x}{\sqrt{4r^{2} - (sr - 2x)^{2}}} \right) r^{2} + \right. \\
\left. 8 \tan^{-1} \left(\frac{sr^{2}x}{\sqrt{4r^{2} - (sr - 2x)^{2}}} \right) r^{2} - 6\pi r^{2} + 20 s r + \right. \\
\left. 8 yr - 14s^{2} - 12sx + 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 12sy + 8xy + 4\sqrt{4r^{2} - (3s - 2x)^{2}} y - 3s\sqrt{4r^{2} - (3s - 2x)^{2}} + 2s\sqrt{4r^{2} - (3s - 2x)^{2}} y - 2s\sqrt{4r^{2} - (sr + 2x)^{2}} - 2s\sqrt{4r^{2} - (sr + 2x)^$$

$$\begin{array}{lll} & s_{3}y - 10Ay + 7 + \sqrt{7}r - (2S - 2y)^{2} + s \sqrt{4r^{2} - (s + 2x)^{2}} + \\ & 2x \sqrt{4r^{2} - (s + 2x)^{2}} - 6s \sqrt{4r^{2} - (s + 2y)^{2}} - \\ & 2x \sqrt{4r^{2} - (s + 2y)^{2}} - 4y \sqrt{4r^{2} - (s + 2y)^{2}} \end{array} \\ & \frac{1}{8} \left(8\cos^{-1} \left(\frac{\frac{5}{5} - x}{r} \right) r^{2} + 8\cos^{-1} \left(\frac{\frac{5}{5} - y}{r} \right) r^{2} + \\ & 8\cos^{-1} \left(\frac{\frac{5}{5} - x}{r} \right) r^{2} + 8\cos^{-1} \left(\frac{\frac{5}{5} - y}{r} \right) r^{2} + \\ & 4\tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 24 s r - \\ & 16 x y + 4 \sqrt{4r^{2} - (3s - 2x)^{2}} + 2x \sqrt{4r^{2} - (3s - 2x)^{2}} x + \\ & 16 x y + 4 \sqrt{4r^{2} - (s + 2x)^{2}} + 2s \sqrt{4r^{2} - (s + 2x)^{2}} + \\ & 2x \sqrt{4r^{2} - (s + 2x)^{2}} - 6s \sqrt{4r^{2} - (s + 2x)^{2}} + \\ & 2x \sqrt{4r^{2} - (s + 2x)^{2}} - 4y \sqrt{4r^{2} - (s + 2x)^{2}} + \\ & 2x \sqrt{4r^{2} - (s + 2x)^{2}} - 4y \sqrt{4r^{2} - (s + 2x)^{2}} + \\ & 8\cos^{-1} \left(\frac{\frac{5}{5} - x}{4r^{2} - (s + 2x)^{2}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \cos^{-1} \left(\frac{3s - 2x}{r^{2}} \right) r^{2} + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \cos^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}$$

$$s\sqrt{4r^2 - (s+2y)^2} - 2y\sqrt{4r^2 - (s+2y)^2}$$

$$4 \tan^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 4(s+2x) r^2 + 2r^2$$

$$(s+2x)\sqrt{4r^2 - (s+2x)^2} \ge 2(\pi r^2 + (s+2x)(s+2y))$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3r-2x}{r}}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 - 4 \tan^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 4 \tan^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{s+2x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{s+2x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{s+2x}{4r^2 - (s+2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{s+2x}{r} \right) r^2 + 2 \cos^{-1} \left($$

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$$\frac{1}{8} \left[8 \cos^{-1} \left(\frac{\frac{s^2 - x}{r}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{r}}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}}}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - 4 s y - 6 s^2 - 12 s x + 4 \sqrt{4r^2 - (3s - 2x)^2} x + 4 s y + 8 x y - 6 s \sqrt{4r^2 - (3s - 2x)^2} - 5 \sqrt{4r^2 - (s+2x)^2} - 2x \sqrt{4r^2 - (s+2x)^2} \right]$$

$$\cos^{-1}\left(\frac{\frac{3s}{2}-x}{r}\right)r^{2} + \cos^{-1}\left(\frac{\frac{s}{2}+x}{r}\right)r^{2} + \\ \tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2} - \frac{\pi r^{2}}{2} + 2sr - s^{2} - 2sx + \\ \frac{1}{2}\sqrt{4r^{2}-(3s-2x)^{2}}x - \frac{3}{4}s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 4sr + 8yr - 6s^2 + 4sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 12sy + 8xy - 3s\sqrt{4r^2 - (3s - 2x)^2} - 12sy + 8xy - 3s\sqrt{4r^2 - (3s - 2x)^2} \right)$$

$$2 r \ge s \land \sqrt{4 r^2 - (3 s - 2 y)^2} \quad (3 s - 2 y) \ge 4$$

$$(s + 2 y) \sqrt{4 r^2 - (s + 2 y)^2} \ge 4 r^2$$

$$4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}}\right) r^2 + 3 s \left(4 r + 4 x + 4 y + \sqrt{4 r^2 - (3 s - 2 x)^2}\right) r^2 + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} r^2 + 4 s r + 4 s x + 8 x y + 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} r^2 + 4 (s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} r^2 + 4 (s + 2 x) \sqrt{4 r^2 - (s + 2 x)^2} \ge 2 \left(\pi r^2 + (s + 2 x) (s + 2 y)\right)$$

$$\sqrt{4r^2 - (3s - 2y)^2} (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 +$$

$$3s\left(4r + 4x + 4y + \sqrt{4r^2 - (3s - 2x)^2}\right)r^2 + 4sr +$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 + 4sr +$$

$$4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x)^2}$$

$$2\pi r^2 + 6s^2 + 2\sqrt{4r^2 - (3s - 2x)^2}$$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 4$$

$$(s + 2y)\sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4\tan^{-1}\left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right)r^2 +$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + 2r \right) \\
8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4 \pi r^2 + 8 s r + 16 y r - 8 s^2 + 2 \sqrt{4r^2 - (3s - 2x)^2} x - 16 s y - 3 s \sqrt{4r^2 - (3s - 2x)^2} - s \sqrt{4r^2 - (s + 2x)^2} - 2 x \sqrt{4r^2 - (s + 2x)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^2 + \frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^2 - (s + 2x)^2}}}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 4\pi r^2 + 16sr - 12s^2 - 8sx + 2\sqrt{4r^2 - (3s - 2x)^2} x - 8sy + 16xy - 3s\sqrt{4r^2 - (3s - 2x)^2} - s\sqrt{4r^2 - (s + 2x)^2} - 2x\sqrt{4r^2 - (s + 2x)^2} \right)$$

$$3s \left(4r + 4x + 4y + \sqrt{4r^2} - (3s - 8yr + 18s^2 + 2\sqrt{4r^2} - (3s - 4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2-(s+2x)}\right)r^2 + 4(s+2)$$

$$2\left(\pi r^2 + 4yr + 3s^2 + 6sx\right) \wedge 4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4(s+2)$$

$$(s+2x)\sqrt{4r^2-(s+2x)^2} \geq 2\left(\pi r^2 + (s+2x)(s+2y)\right)$$

$$2r \geq s \wedge \sqrt{4r^2-(3s-2y)^2} \left(3s-2y\right) \geq 4r^2$$

$$4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 4r^2$$

$$4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2-(3s-2x)^2}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2-(s+2x)^2}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2-(s+2x)^2}\right)r^2 + 12sr + (s+2x)\left(4y + \sqrt{4r^2-(s+2x)^2}\right)r^2 + 3s\left(4r + 4x + 4y + \sqrt{4r^2-(s+2x)^2}\right)r^2 + 3s\left(4r + 4x + 4y + \sqrt{4r^2-(s+2x)^2}\right)r^2 + 4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(3s-2x)^2}}\right)r^2 + 4s^2$$

$$4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4(s+2x)\left(4r^2 + 4x + 4y + \sqrt{4r^2-(3s-2x)^2}\right)r^2 + 4(s+2x)\left(4r^2 +$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3-x}{r}}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 \sin^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 2 \pi r^{2} + 12 s r - 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 2 \pi r^{2} + 12 s r - 4 \sin^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (3s-2x)^{2}}} \right) r^{2} + 4 s r + 12 s r + 2 \sqrt{4r^{2} - (3s-2x)^{2}} + 4 \tan^{-1} \left(\frac{3+2x}{\sqrt{4r^{2} - (s+2x)^{2}}} \right) r^{2} + 4 r^{2} + 12 s r + 4 r^{2} + 6 s^{2} + 2 \sqrt{4r^{2} - (3s-2x)^{2}} \right) r^{2} + 4 r^{2} + 12 s r + 4 r^{2} + 6 s^{2} + 2 \sqrt{4r^{2} - (3s-2x)^{2}} + 4 r^{2} + 12 s r + 4 r^{2}$$

 $s\sqrt{4r^2-(s+2r)^2}-2r\sqrt{4r^2-(s+2r)^2}$

$$2r \ge s \land \sqrt{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 2$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (2x^2 + 8yr + 18s^2 + 2\sqrt{4r^2 - 2x^2}\right)}\right) r^2 + \frac{3s \left(4r + 4x + 4y + \sqrt{4r^2 - (2x^2 + 8yr + 18s^2 + 2\sqrt{4r^2 - 2x^2}\right)}\right) r^2 + \frac{4r^2}{4r^2 - (3s - 2y)^2} \quad (3s - 2y) \ge 2$$

$$(s + 2y) \sqrt{4r^2 - (s + 2y)^2} \ge 4r^2$$

$$4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^2 - (3s - 2x)^2}}\right) r^2 + 4sr + \frac{4sx + 8xy + 3s\sqrt{4r^2 - (3s - 2x^2)}}{\sqrt{4r^2 - (s + 2x)^2}}\right) r^2 + 12sr + \frac{(s + 2x)\left(4y + \sqrt{4r^2 - (s + 2x)}\right)}{\sqrt{4r^2 - (s + 2x)^2}} r^2 + 4(s + 2x^2 + 2$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}}} \right) r^{2} - 4 \pi r^{2} + 24 s r - 16 s y - 24 s^{2} + 2 \sqrt{4r^{2} - (3s - 2x)^{2}} x + 16 s y - 3 s \sqrt{4r^{2} - (3s - 2x)^{2}} - 2 x \sqrt{4r^{2} - (s + 2x)^{2}} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8 \tan^{-1} \left(\frac{\frac{s + 2x}{2}}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 6 \pi r^{2} + 28 s r - 8 y r - 26 s^{2} - 4 s x + 2 \sqrt{4r^{2} - (3s - 2x)^{2}} \right)$$

$$\cos^{-1} \left(\frac{\frac{3s}{2} - x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \cos^{-1} \left(\frac{\frac{s}{2} + x}{r} \right) r^{2} + \cos^{-1} \left(\frac{\frac{3s - 2x}{2}}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + \frac{3s - 2x}{2} + 2 s r - 3 s^{2} + 2 s x - \frac{1}{4} s \sqrt{4r^{2} - (s + 2x)^{2}} - \frac{1}{2} x \sqrt{4r^{2} - (s + 2x)^{2}} \right)$$

$$(\sqrt{4r^{2}-(s+2x)^{2}})$$

$$(s+2x)\left(4y+\sqrt{4r^{2}-(s+2)}\right)$$

$$2(\pi r^{2}+4yr+3s^{2}+6sx)$$

$$2r \ge s \land \sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+4sr+4sr^{2}+6s^{2}+2\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2)$$

$$4\sin^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}} \ge 2(\pi r^{2}+(s+2x)(s+2y))$$

$$2r \ge s \land \sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+4sr+4sr+4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+4sr+4sr+4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$2r \ge s \land \sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+4sr+4sr+4sx+4sx+4sx+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$2r \ge s \land \sqrt{4r^{2}-(3s-2y)^{2}} (3s-2y) \ge 4r^{2}$$

$$4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+12sr+4sr+4sx+4sx+3s^{2}+6sx\right) \land 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2)$$

$$2(\pi r^{2}+4yr+3s^{2}+6sx) \land 4\tan^{-1}\left(\frac{s+2x}{\sqrt{4r^{2}-(s+2x)^{2}}}\right)r^{2}+4(s+2)$$

$$(s+2x)\sqrt{4r^{2}-(s+2x)^{2}}}r^{2}+4(s+2)$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{1}{3} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{1}{2} + x}{r} \right) r^{2} + \frac{2r \ge s \land}{\sqrt{4r^{2} - (3s - 2y)^{2}}} \right\}$$

$$8 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2y)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - \frac{(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}}}{(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}}} \ge 4r^{2}$$

$$6 \pi r^{2} + 20 s r + 8 y r - 26 s^{2} + 12 s x - 4 s y - 8 x y - s \land \sqrt{4r^{2} - (s + 2x)^{2}} \right) r^{2} + 12 s r + s \land \sqrt{4r^{2} - (s + 2x)^{2}}$$

$$1 \frac{1}{8} \left[8 \cos^{-1} \left(\frac{\frac{1}{3} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{1}{3} - x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - \frac{12 s r}{(s + 2x) \sqrt{4r^{2} - (s + 2y)^{2}}} \right) r^{2} + \frac{12 s r}{(s + 2x) \sqrt{4r^{2} - (s + 2y)^{2}}} \right] r^{2} + \frac{12 s r}{(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}}}$$

$$1 \frac{1}{8} \left[8 \cos^{-1} \left(\frac{\frac{1}{3} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{1}{3} - x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - \frac{12 s r}{(s + 2y) \sqrt{4r^{2} - (s + 2y)^{2}}} \right) r^{2} + 12 s r + \frac{12 s r}{(s + 2x) \sqrt{4r^{2} - (s + 2y)^{2}}} \right] r^{2} + \frac{12 s r}{(s + 2x) \sqrt{4r^{2} - (s + 2y)^{2}}} r^{2} + 4 \cos^{-1} \left(\frac{\frac{1}{3} - x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \cos^{-1} \left(\frac{\frac{1}{3} - x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \cos^{-1} \left(\frac{\frac{1}{3} - x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + \frac{12 s r}{(s + 2x) \sqrt{4r^{2} - (s + 2x)^{2}}} r^{2} + 4 \cos^{-1} \left(\frac{\frac{1}{3} - x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 2 r s \land \sqrt{4r^{2} - (s + 2x)^{2}} r^{2} + 4 s r + 4 s^{2} r^{2} + 4 s r^{2} +$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{s_2 x}{r}}{r} \right) r^2 + 4 \left(s + 2 \right) \right) \right\} \\ + 4 \tan^{-1} \left(\frac{\frac{s_2 x}{\sqrt{4r^2 - (s_2 x)^2}}}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{s_2 x}{r}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s_2 x}{r}}{r} \right) r^2 + 3 r + 4 \cos^{-1} \left(\frac{s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 - 2 \pi r^2 + 4 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 2 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 4 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 2 \sin^{-1} \left(\frac{s_2 x}{r} \right) r^2 + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 12 s r + 4 \sin^{-1} \left(\frac{3s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 2 \cos^{-1} \left(\frac{s_2 x}{r} \right) r^2 + 3 \sin^{-1} \left(\frac{s_2 x}{\sqrt{4r^2 - (s_2 x)^2}} \right) r^2 + 2 \cos^{-1} \left(\frac{s_2 x}{r} \right) r^2 + 3 \cos^{-1} \left(\frac{s_2 x}{r}$$

$$\frac{1}{4}\left(4\cos^{-1}\left(\frac{\frac{3-x}{r}}{r}\right)r^{2}+4\cos^{-1}\left(\frac{\frac{5-x}{r}}{r}\right)r^{2}+\right)$$

$$\frac{1}{4}\left(4\cos^{-1}\left(\frac{\frac{5-x}{r}}{r}\right)r^{2}+4\cos^{-1}\left(\frac{\frac{5-x}{r}}{\sqrt{r}}\right)r^{2}+\right)$$

$$2r \ge s \land \qquad \sqrt{4r^{2}-(3s-2y)^{2}} \quad (3s-2y) \ge 4$$

$$4\cos^{-1}\left(\frac{\frac{5-x}{r}}{r}\right)r^{2}+4\tan^{-1}\left(\frac{\frac{3-x}{r}}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}-\right)$$

$$2\pi r^{2}+8sr-4s^{2}-8sx+$$

$$2\sqrt{4r^{2}-(3s-2x)^{2}} \quad x-3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$s\sqrt{4r^{2}-(s+2y)^{2}}-2y\sqrt{4r^{2}-(s+2y)^{2}}\right)$$

$$8yr+18s^{2}+2\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{\frac{3-x-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+4sr+$$

$$4sx+8xy+3s\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{\frac{3-x-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+4sr+$$

$$4syr+6s^{2}+4sx+2\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$4\tan^{-1}\left(\frac{\frac{3-x-2x}{\sqrt{4r^{2}-(3s-2x)^{2}}}\right)r^{2}+2\pi r^{2}+4sr+$$

$$8yr-6s^{2}+4sx+2\sqrt{4r^{2}-(3s-2x)^{2}}$$

$$2s\sqrt{4r^{2}-(s+2x)^{2}}-2\sqrt{4r^{2}-(3s-2x)^{2}}-2s\sqrt{4r^{2}-(s+2x)^$$

$$16 s y - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 x)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2}$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3 s - x}{2}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s + x}{2} r}{r} \right) r^2 + 4 \tan^{-1} \left(\frac{3 s - 2 x}{\sqrt{4 r^2 - (3 s - 2 x)^2}} \right) r^2 + 4 \tan^{-1} \left(\frac{\frac{s + 2 x}{\sqrt{4 r^2 - (s + 2 x)^2}}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 4 \pi r^2 + 16 s r - 12 s^2 - 8 s x + 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 8 s y + 16 x y - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - s \sqrt{4 r^2 - (s + 2 x)^2} - 2 x \sqrt{4 r^2 - (s + 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right]$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3 s - x}{2}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s + x}{2}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{3 s - 2 x}{4 r^2 - (3 s - 2 x)^2}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 + 3 \sin^{-1} \left(\frac{\frac{3 s - 2 x}{4 r^2 - (s + 2 x)^2}}{\sqrt{4 r^2 - (s + 2 x)^2}} \right) r^2 - 6 \pi r^2 + 20 s r + 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4 r^2 - (3 s - 2 x)^2} x - 12 s y + 8 x y - 3 s \sqrt{4 r^2 - (3 s - 2 x)^2} - 2 s \sqrt{4 r^2 - (s + 2 y)^2} - 4 y \sqrt{4 r^2 - (s + 2 y)^2} \right]$$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3 s - 2 x}{2}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{s + x}{2}}{r$$

 $10yr - 8s^2 + 2\sqrt{4r^2 - (3s - 2x)^2} x -$

$$(s+2x)\left(4y+\sqrt{4r^2-(s+2x)^2}\right) \\ 2\left(\pi r^2+4yr+3s^2+6sx\right) \wedge \\ 4\tan^{-1}\left(\frac{s^22x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4(s+2x) + \\ 8\cos^{-1}\left(\frac{\frac{1}{2}r^2}{r}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2+4\sin^{-1}\left(\frac{3s-2$$

$$8 yr - 26 s^2 - 4 sx + 2 \sqrt{4r^2 - (3s - 2x)^2} x + 12 sy - 8 xy - 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2 s \sqrt{4r^2 - (s + 2y)^2} - 4 y \sqrt{4r^2 - (s + 2y)^2}$$

$$\frac{1}{4} \left(4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 6 s^2 + 2 \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 6 s^2 + 2 \sqrt{4r^2 - (s + 2y)^2} \right) \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{5}{2} - x}{r} \right) r^2 + 2 \cos^{-1} \left(\frac{5}{2} - x \right) r^2 +$$

$$\begin{aligned} &\tan^{-1}\left(\frac{s+2x}{\sqrt{4x^2-(s+2y)^2}}\right)r^2 - \pi r^2 + 4sr - 4s^2 - \frac{1}{4}s\sqrt{4r^2-(s+2y)^2} - \frac{1}{2}y\sqrt{4r^2-(s+2y)^2} \\ &\frac{1}{4}\left(4\cos^{-1}\left(\frac{\frac{5x}{2}r}{r}\right)r^2 + 4\cos^{-1}\left(\frac{\frac{5x}{2}r}{r}\right)r^2 + 4\cos^{-1}\left(\frac{\frac{5x}{2}r}{r}\right)r^2 + 2\cos \delta\left(s+2y\right)\sqrt{4r^2-(s+2y)^2} \right) \\ &-2\sqrt{4r^2-(3s-2x)^2} - x + 2\sqrt{4r^2-(s+2x)^2} - 2x\sqrt{4r^2-(s+2x)^2} - 3s\sqrt{4r^2-(s+2x)^2} - 2x\sqrt{4r^2-(s+2x)^2} - 3s\sqrt{4r^2-(s+2x)^2} - 3s\sqrt{4r^2-(s+2x)^2} - 3s\sqrt{4r^2-(s+2x)^2} - 3s\sqrt{4r^2-(s+2x)^2} - 3s\left(4r+4x+4y+\sqrt{4r^2-(s+2x)^2}\right)r^2 + 4sr + 4sx + 8xy + 3s\sqrt{4r^2-(3s-2y)^2} - 4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4sr + 4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 2r + 4sr + 4tan^{-1}\left(\frac{s+2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4sr + 4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 + 4sr + 4tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^2-(s+2x)^2}}\right)r^2 +$$

$$\frac{1}{8} \left\{ 8\cos^{-1}\left(\frac{\frac{3i-x}{r}}{r}\right)r^{2} + 8\cos^{-1}\left(\frac{\frac{5i-x}{r}}{r}\right)r^{2} + 8\cos^{-1}\left(\frac{\frac{3i-y}{r}}{r}\right)r^{2} + 2\cos^{-1}\left(\frac{\frac{3i-y}{r}}{r}\right)r^{2} + 2\cos^{-1}\left(\frac{\frac{3i-y}{r}}{r}\right)r^{2} + 2r + 3s^{2} + 6sx\right) \right\}$$

$$4\tan^{-1}\left(\frac{3s-2x}{\sqrt{4r^{2}-(s^{2}+2x)^{2}}}\right)r^{2} - 2\pi r^{2} + 12sr - 8yr - 6s^{2} - 12sx + 4\sqrt{4r^{2}-(3s-2x)^{2}} x + 4sy + 8xy + 4\sqrt{4r^{2}-(3s-2x)^{2}} y - 6s\sqrt{4r^{2}-(3s-2x)^{2}} - 5s\sqrt{4r^{2}-(s+2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2x)^{2}} - 6s\sqrt{4r^{2}-(s+2x)^{2}} - 6s\sqrt{4r^{2}-(3s-2x)^{2}} - 6s\sqrt{4r^{2}-($$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{3z}{2} - x}{r} \right) r^{2} + 8 \cos^{-1} \left(\frac{\frac{z}{2} + x}{r} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4 \tan^{-1} \left(\frac{s + 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} - 4\pi r^{2} + 8s r + 16 y r - 8s^{2} + 2\sqrt{4r^{2} - (3s - 2y)^{2}} x - 16 s y + 4\sqrt{4r^{2} - (3s - 2y)^{2}} y - 3s\sqrt{4r^{2} - (3s - 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8\cos^{-1} \left(\frac{\frac{3s}{2} - x}{r} \right) r^{2} + 8\cos^{-1} \left(\frac{\frac{z}{2} + x}{r} \right) r^{2} + 4\tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4\tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (s + 2x)^{2}}} \right) r^{2} + 4\pi r^{2} + 16sr - 12s^{2} - 8sx + 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 8sy + 16xy + 4\sqrt{4r^{2} - (3s - 2x)^{2}} y - 3s\sqrt{4r^{2} - (s + 2x)^{2}} - s\sqrt{4r^{2} - (s + 2x)^{2}} - 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6s\sqrt{4r^{2} - (s + 2x)^{2}} - 2x\sqrt{4r^{2} - (s + 2x)^{2}} - 6s\sqrt{4r^{2} - (3s - 2y)^{2}} \right)$$

$$\frac{1}{8} \left(8\cos^{-1} \left(\frac{\frac{3z}{2} - x}{r} \right) r^{2} + 8\cos^{-1} \left(\frac{\frac{z}{2} + x}{r} \right) r^{2} + 8\cos^{-1} \left(\frac{\frac{3z}{2} - y}{r} \right) r^{2} + 4\tan^{-1} \left(\frac{3s - 2x}{\sqrt{4r^{2} - (3s - 2x)^{2}}} \right) r^{2} + 8\tan^{-1} \left(\frac{\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}} \right) r^{2} + 6\pi r^{2} + 20sr + 8xr - 14s^{2} - 12sx + 2\sqrt{4r^{2} - (3s - 2x)^{2}} x - 12$$

$$4 \tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2)$$

$$(s+2x) \sqrt{4r^2 - (s+2x)^2} \ge 2 (\pi r^2 + (s+2x) (s+2y))$$

$$2 r \ge s \wedge (s+2y) \sqrt{4r^2 - (s+2y)^2}$$

$$4 \tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (3s-2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 12sr + (s+2x) \left(4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (3s-2x)^2} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 4 (s+2) \left(\frac{s+2x}{\sqrt{4r^2 - (s+2x)^2}} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left(4r + 4x + 4y + 4y + \sqrt{4r^2 - (s+2x)^2} \right) r^2 + 3s \left($$

$$\frac{1}{8} \left\{ 8 \cos^{-1} \left(\frac{\frac{3z-2x}{r}}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{z-x}{r}}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{z-x}{r}}{r} \right) r^2 + 6 \cos^{-1} \left(\frac{z-x}{r} \right) r^2 + 6 \cos^{-1} \left($$

$$\begin{array}{l} 16\,s\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2}\,\,y - \\ 3\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2} - s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 6\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 8\,\cos^{-1}\!\!\left(\frac{\frac{5x - x}{x}}{x}\right)\!\!r^2 + 8\cos^{-1}\!\!\left(\frac{\frac{5x - x}{x}}{r}\right)\!\!r^2 + \\ 8\,\cos^{-1}\!\!\left(\frac{\frac{5x - x}{x}}{x}\right)\!\!r^2 + 4\tan^{-1}\!\!\left(\frac{3s - 2\,x}{\sqrt{4\,r^2 - (s + 2\,x)^2}}\right)\!\!r^2 + \\ 8\,\tan^{-1}\!\!\left(\frac{\frac{3s - 2\,x}{\sqrt{4\,r^2 - (s + 2\,x)^2}}}{\sqrt{4\,r^2 - (s + 2\,x)^2}}\right)\!\!r^2 - 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 12\,s\,y - 8\,x\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,y - \\ 3\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2} - 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,x + \\ 12\,s\,y - 8\,x\,y + 4\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,y - \\ 3\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2} - 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2}\,\,y - \\ 3\,s\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2} - 6\,s\,\sqrt{4\,r^2 - (3\,s - 2\,y)^2}\,\,y - \\ 2\,\pi\,r^2 + 8\,s\,r - 12\,s^2 + 8\,s\,x + \\ 2\,\sqrt{4\,r^2 - (3\,s - 2\,x)^2}\,\,y - s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 3\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 3\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 3\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 3\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2 - (s + 2\,x)^2} - 3\,s\,\sqrt{4\,r^2 - (s + 2\,x)^2} - \\ 3\,8\,\tan^{-1}\!\!\left(\frac{3s - 2x}{\sqrt{4\,r^2 - (s + 2\,x)^2}}\right)\!\!r^2 + 4\tan^{-1}\!\!\left(\frac{s - 2x}{\sqrt{4\,r^2 - (s + 2\,x)^2}}\right)\!\!r^2 + \\ 4\,\sin^{-1}\!\!\left(\frac{s - 2x}{\sqrt{4\,r^2 - (s + 2\,x)^2}}\right)\!\!r^2 + 4\sin^{-1}\!\!\left(\frac{s - 2x}{\sqrt{4\,r^2 - (s + 2\,x)^2}}\right)\!\!r^2 + \\ 2\,(s\,r^2 + 4\,y\,r + 3\,s^2 + 6\,s\,x\right)\,\Lambda$$

$$8 \tan^{-1} \left(\frac{\sqrt{4r^2 - (s_1 - 2s_1^2)^2}}{\sqrt{4r^2 - (s_1 - 2s_1^2)^2}} \right)^{r} + 4 \tan^{-1} \left(\frac{\sqrt{4r^2 - (s_1 - 2s_1^2)^2}}{\sqrt{4r^2 - (s_1 - 2s_1^2)^2}} \right)^{r} - \left(\sqrt{4r^2 - (s_1 - 2s_1^2)^2} \right)^{r} - \left(\sqrt{4r^2 - (s$$

$$\begin{array}{c} 6\,s\,\sqrt{4\,r^2-(3\,s-2\,x)^2} - s\,\sqrt{4\,r^2-(s+2\,x)^2} - \\ 2\,x\,\sqrt{4\,r^2-(s+2\,y)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,y)^2} \end{array} \\ 2\,s\,\sqrt{4\,r^2-(s+2\,y)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,y)^2} \end{array} \\ = 2\,s\,\sqrt{4\,r^2-(s+2\,y)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,y)^2} \end{array} \\ = 2\,s\,\sqrt{4\,r^2-(s+2\,y)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,y)^2} \end{array} \\ = 4\,\tan^{-1}\!\!\left(\frac{s+2\,x}{\sqrt{4\,r^2-(s+2\,y)^2}}\right) r^2 + 12\,s\,r + \\ = 8\,\cos^{-1}\!\!\left(\frac{\frac{3s-2\,x}{r}}{\frac{3s-2\,x}{r}}\right) r^2 + 8\,\cos^{-1}\!\!\left(\frac{\frac{2s\,x}{r}}{r}\right) r^2 + \\ = 8\,\cos^{-1}\!\!\left(\frac{\frac{3s-2\,x}{r}}{\frac{3s-2\,x}{r}}\right) r^2 + 8\,\cos^{-1}\!\!\left(\frac{\frac{2s\,x}{r}}{r}\right) r^2 + \\ = 4\,\sin^{-1}\!\!\left(\frac{3s-2\,x}{\sqrt{4\,r^2-(s+2\,x)^2}}\right) r^2 - 2\,\pi\,r^2 + 12\,s\,r - \\ = 8\,y\,r - 6\,s^2 - 12\,s\,x + 4\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,y - \\ = 8\,y\,r - 6\,s^2 - 12\,s\,x + 4\,\sqrt{4\,r^2-(3\,s-2\,x)^2}\,y - \\ = 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 6\,s\,\sqrt{4\,r^2-(s+2\,x)^2} - \\ = 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,x)^2} - \\ = 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,y)^2} - \\ = 2\,s\,\sqrt{4\,r^2-(s+2\,x)^2} - 4\,y\,\sqrt{4\,r^2-(s+2\,y)^2} - \\ = 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 2\,y\,\sqrt{4\,r^2-(s+2\,x)^2} - \\ = 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - \\ = 2\,x\,\sqrt{4\,r^2-(s+2\,x)^2} - 2\,x\,\sqrt{4\,r^2-(s+2\,x)^$$

$$3s\sqrt{4r^2 - (3s - 2x)^2} - 2s\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 4x\sqrt{4r^2 - (s + 2x)^2} - 4y\sqrt{4r^2 - (s + 2y)^2} - 4y\sqrt{4r^2 - (s + 2x)^2} - 2(\pi r^2 + 4yr + 3s^2 + 6sx) \wedge 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{3s-2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 4tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s + 2x)^2}}\right)r^2 + 2tan^{-1} \left(\frac{s+2x}{\sqrt{4r^2 - (s + 2x)^2}$$

 $2\pi r^{-} + \delta V r + 1\delta S^{-} + 2V 4 r^{-} -$

$$8 \tan^{-1} \left(\frac{i + 2x}{\sqrt{4r^2 - (s + 2x)^2}} \right) r^2 - 6\pi r^2 + 20 s r + \\ 8 y r - 14 s^2 - 12 s x + 2 \sqrt{4r^2 - (3s - 2y)^2} \ x - \\ 12 s y + 8 x y + 4 \sqrt{4r^2} - (3s - 2y)^2 \ y - \\ 3 s \sqrt{4r^2 - (3s - 2x)^2} - 6s \sqrt{4r^2 - (3s - 2y)^2} - \\ 2 s \sqrt{4r^2 - (s + 2y)^2} - 4y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{1}{2} - y}{\frac{3}{r}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} + y}{r} \right) r^2 + \\ 8 \cos^{-1} \left(\frac{\frac{1}{2} - y}{\frac{3}{r}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} + y}{r} \right) r^2 + \\ 8 \cos^{-1} \left(\frac{\frac{1}{2} - y}{\frac{3}{r}} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} + y}{r} \right) r^2 + \\ 4 \tan^{-1} \left(\frac{3 + 2x}{\sqrt{4r^2 - (3s - 2x)^2}} \right) r^2 - 2\pi r^2 + 12 s r - \\ 8 y r - 18 s^2 + 12 s x + 2 \sqrt{4r^2 - (3s - 2x)^2} x + \\ 12 s y - 8 x y + 4 \sqrt{4r^2 - (3s - 2y)^2} y - \\ 3 s \sqrt{4r^2 - (3s - 2x)^2} - 2s \sqrt{4r^2 - (s + 2x)^2} - \\ 4 x \sqrt{4r^2 - (s + 2x)^2} - 6s \sqrt{4r^2 - (s + 2x)^2} - \\ 2 s \sqrt{4r^2 - (s + 2y)^2} - 4y \sqrt{4r^2 - (s + 2y)^2} \right)$$

$$\frac{1}{8} \left(8 \cos^{-1} \left(\frac{\frac{1}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} - x}{r} \right) r^2 + 8 \cos^{-1} \left(\frac{\frac{1}{2} - x}{r} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 4 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s + 2x)^2} \right) r^2 + 2 \cos^{-1} \left(\frac{\frac{1}{2} - x}{4r^2 - (s$$

$$8 \cos^{-1}\left(\frac{z^{-2}}{r}\right) r^{2} + 4 \tan^{-1}\left(\frac{3z+x}{\sqrt{4r^{2}-(3z-2s)^{2}}}\right) r^{2} + 4 \tan^{-1}\left(\frac{3z+x}{\sqrt{4r^{2}-(4z-2s)^{2}}}\right) r^{2} + 4 \cos^{-1}\left(\frac{z+x}{r}\right) r^{2} + 4$$

$$8yr - 26s^{2} + 12sx - 4sy - 8xy + 4\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 6s\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 4y\sqrt{4r^{2} - (s+2y)^{2}} - 4y\sqrt{4r^{2} - (s+2y)^{2}} - 2s\sqrt{4r^{2} - (s+2y)^{2}} - 4y\sqrt{4r^{2} - (s+2y)^{2}} - 2s\sqrt{4r^{2} - (s+2y)^{2}} - 4y\sqrt{4r^{2} - (s+2y)^{2}} - 4s\cos^{-1}\left(\frac{\frac{s+2x}{r}}{r}\right)r^{2} + 8\cos^{-1}\left(\frac{\frac{s+2x}{r}}{r}\right)r^{2} + 8\tan^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} + 4\sin^{-1}\left(\frac{\frac{s+2x}{\sqrt{4r^{2} - (s+2x)^{2}}}}{\sqrt{4r^{2} - (s+2x)^{2}}}\right)r^{2} - 6\pi r^{2} + 28sr - 8yr - 30s^{2} + 4sx + 4sy + 8xy + 4\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 6s\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 6s\sqrt{4r^{2} - (s+2x)^{2}} - 2x\sqrt{4r^{2} - (s+2x)^{2}} - 6s\sqrt{4r^{2} - (s+2x)^{2}} - 6s\sqrt{4r^{2} - (s+2x)^{2}} - 2r\sqrt{4r^{2} - (s+2x)^{2}} - 4y\sqrt{4r^{2} - (s+2x)^{2}} - 2r\sqrt{4r^{2} - (s+2x)^{2}} - 4y\sqrt{4r^{2} - (s+2x)^{2}} - 2r\sqrt{4r^{2} - (s+2x)^{2}} - 4y\sqrt{4r^{2} - (s+2x)^{2}} - 4y\sqrt{4r$$