PreCalculus Quiz 2 version 1

name:

1. Select equivalent expressions AND solve.

$$\frac{4}{x^2+3}+\frac{1}{x+2}-\frac{6}{(x^2+3)(x+2)}=\frac{8}{x^2+3}$$

A $[x=-\sqrt{22}+3, x=\sqrt{22}+3]$

B $[x=-\sqrt{15}+2, x=\sqrt{15}+2]$

C $[x=-\sqrt{7}+2, x=\sqrt{7}+2]$

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2. Select equivalent expressions AND solve.

$$x+\frac{x-2}{x-3}+\frac{1}{x-2}-\frac{4}{x-3}-2=\frac{x^2-4x+4}{x-3}$$

A $[x=(\frac{5}{3})]$

B none of these

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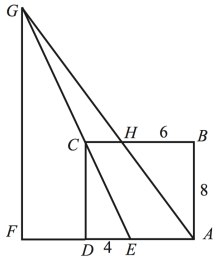
3. In rectangle ABCD, we have AB = 8, BC = 9, H is on BC with BH = 6, E is on AD with DE =4, line EC intersects line AH at G, and F is on line AD with GF $\perp$ AF . What is the length GF ?



A 30 B 20 C 24 D 28 E 16

F none of these

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4. Select the equivalent expression/s .

$$x=-1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{4+\cfrac{\cdots}{\cdots}}}}}}}}$$

A $-\frac{1}{2}\sqrt{37}+\frac{5}{2}$

B $-\sqrt{5}+1$

C $-\sqrt{5}+2$

D $-\frac{1}{2}\sqrt{29}+\frac{3}{2}$

E none of these

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5. Select equivalent expressions AND solve.

$$x+\frac{1}{x+1}+\frac{1}{(x^2-2)(x+1)}+3\geq x-\frac{6}{x^2-2}+3$$

A $[[x\geq(-5), x<-\sqrt{2}], [x>\sqrt{2}]]$

B $[[x<4]]$

C $[[x\leq(-\frac{21}{4})], [x>(-3), x<2]]$

D $[[x\geq-\frac{1}{2}\sqrt{57}-\frac{3}{2}, x<-\sqrt{5}], [x>1, x<\sqrt{5}], [x\geq\frac{1}{2}\sqrt{57}-\frac{3}{2}]]$

6.

Select equivalent expressions AND solve.

$$x+\frac{1}{x-2}+\frac{2}{(x+6)(x-2)}-2\geq x-\frac{3}{x+6}-2$$

A $[[x>(\frac{1}{2}),x<2],[x>2]]$

B $[[x>(-6),x\leq(-\frac{1}{2})],[x>2]]$

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7. Select equivalent expressions AND solve.

$$x^3+x^2+7\,x+7=x+1$$

A $[x=(-2i),x=(2i),x=1]$

B $[x=-i\sqrt{6},x=i\sqrt{6},x=(-1)]$

C $x^3+x^2+6\,x+6=0$

D $(x^2-5)(x-3)=0$

E $(x^2+6)(x+1)=0$

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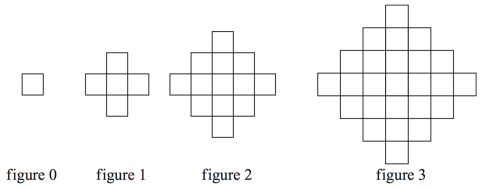
8. Figures 0, 1, 2, and 3 consist of 1, 5, 13, and 25 nonoverlapping unit squares, respectively. If the pattern were continued, how many nonoverlapping unit squares would there be in figure 112?



A 36181 B 37813 C 29041 D 25313
E 36721 F none of these

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9. Select equivalent expressions AND solve.

$$|2\,x-3|=\frac{1}{x}+3$$

A $[x=\frac{1}{2}\sqrt{17}+\frac{3}{2},x=-\frac{1}{2}\sqrt{41}-\frac{3}{2}]$

B $[x=\frac{1}{2}\sqrt{11}+\frac{3}{2}]$

C $[x=-\frac{23}{2\sqrt{3}\sqrt{2}+1},x=\frac{1}{\sqrt{5}\sqrt{2}-3},x=-\frac{1}{\sqrt{5}\sqrt{2}+3}]$

D $[x=(\frac{1}{2})]$

E []

F none of these

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10. Select the equivalent expression/s

$$\sqrt[3]{x\sqrt[3]{x\sqrt[3]{x\sqrt{x}}}}$$

A $\sqrt[81]{x^{80}}$ B $\sqrt{x}$ C $\sqrt[3]{x^2}$ D $\sqrt[27]{x^2}$
E $\sqrt[54]{x}$ F none of these

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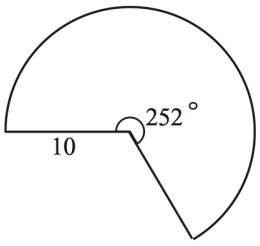
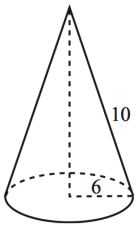
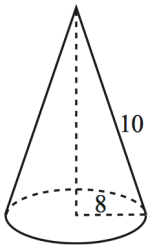
11. Which of the cones below can be formed from a252^o sector of a circle of radius 10 by aligning the two straight sides?



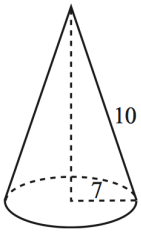


A

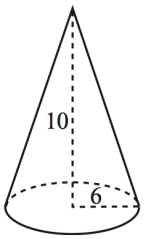
B



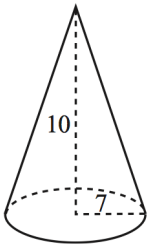
C



D



E



F none of these

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12. Select equivalent expressions AND solve.

$$-\frac{3}{x^2+4}+\frac{1}{x-2}+\frac{4}{(x^2+4)(x-2)}>\frac{1}{x^2+4}$$

A $[[x>2]]$

B $\left[\left[x>-\frac{1}{2}\sqrt{5}-\frac{3}{2},x<(-2)\right],\left[x>-\sqrt{3},x<\frac{1}{2}\sqrt{5}-\frac{3}{2}\right],\left[x>\sqrt{3}\right]\right]$

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13. Select equivalent expressions AND solve.

$$-\frac{3}{x^2+3}+\frac{1}{x+1}-\frac{2}{(x^2+3)(x+1)}\geq\frac{3}{x^2+3}$$

A $\left[\left[x>(-1),x\leq-\sqrt{14}+3\right],\left[x\geq\sqrt{14}+3\right]\right]$

B $\left[\left[x<(-3)\right],\left[x>1,x\leq\left(\frac{3}{2}\right)\right]\right]$

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14. Select equivalent expressions AND solve.

$$\sqrt{-5\,x+6}=2\,x$$

A $[x=\sqrt{23}+7]$

B $[]$

C $[x=-i\sqrt{7}\sqrt{3}+3,x=i\sqrt{7}\sqrt{3}+3]$

D $\left[x=\left(\frac{3}{4}\right)\right]$

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15. Select equivalent expressions AND solve.

$$x^4+5\,x^2+3=x^2-1$$

A $\left(x^2+6\right)\left(x^2-2\right)=0$

B $\left(x^2+2\right)^2=0$

C $[x=-\sqrt{2},x=\sqrt{2},x=-i\sqrt{6},x=i\sqrt{6}]$

D $\left(x^2+6\right)(x-3)=0$

E $x^3-3\,x^2+6\,x-18=0$

F $[x=-i\sqrt{2},x=i\sqrt{2}]$

G $x^4+4\,x^2+4=0$

16.

Select equivalent expressions AND solve.

$$x+\frac{x+2}{x^2+2}+\frac{2}{x^2+2}+\frac{1}{x+2}+2=\frac{x^3+2\,x^2+3\,x+6}{x^2+2}$$

A $\left[x=-\frac{1}{2}\sqrt{21}-\frac{3}{2},x=\frac{1}{2}\sqrt{21}-\frac{3}{2}\right]$

B $\left[x=\left(-3i+1\right),x=\left(3i+1\right)\right]$

C $\left[x=-i\sqrt{5}-1,x=i\sqrt{5}-1\right]$

D none of these

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17. What is the difference between the sum of the first 2007 even counting numbers and the first first 2007 odd counting numbers

A 4014 B 4013 C 1 D 2006 E 2007 F 2 G 0 H none of these

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18. Select equivalent expressions AND solve.

$$\left|-6\,x-6\right|=3\,x-6$$

A []

B $\left[x=\left(-\frac{3}{2}\right),x=\left(-\frac{1}{8}\right)\right]$

C none of these

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19. Select the equivalent expression/s .

$$x=-2+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{5+\cfrac{1}{5+\cfrac{1}{5+\cfrac{1}{5+\cfrac{1}{5+\cfrac{\cdots}{\cdots}}}}}}}}$$

A $-\frac{1}{2}\sqrt{21}+\frac{3}{2}$

B $-\frac{1}{2}\sqrt{29}+\frac{3}{2}$

C $-\sqrt{5}+2$

D $-\sqrt{6}+2$

E none of these

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20. Select equivalent expressions AND solve.

$$\frac{x^4-3\,x^3+14\,x-14}{x^3-x^2-3\,x+3}=x-2$$

A $\left[x=-\frac{1}{2}\sqrt{33}-\frac{3}{2},x=\frac{1}{2}\sqrt{33}-\frac{3}{2}\right]$

B $\left[x=\left(\frac{13}{4}\right)\right]$

C $\left[x=\left(\frac{1}{2}\right)\right]$

D $\left[x=-i\sqrt{2}+2,x=i\sqrt{2}+2\right]$

E none of these

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21. Select equivalent expressions AND solve.

$$\frac{1}{x+3}-\frac{3}{(x^2+2)(x+3)}=\frac{1}{x^2+2}$$

A $\left[x=-\frac{1}{2}\sqrt{65}-\frac{3}{2},x=\frac{1}{2}\sqrt{65}-\frac{3}{2}\right]$

B $\left[x=-\frac{1}{2}\sqrt{77}-\frac{5}{2},x=\frac{1}{2}\sqrt{77}-\frac{5}{2}\right]$

C $\left[x=-\frac{1}{2}\sqrt{17}+\frac{1}{2},x=\frac{1}{2}\sqrt{17}+\frac{1}{2}\right]$

D none of these

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22. Select equivalent expressions AND solve.

$$\left|-2\,x+2\right|=-x+10$$

A $\left[x=-\frac{1}{2}\sqrt{13}\sqrt{7}\sqrt{3}-\frac{25}{2},x=\frac{1}{2}\sqrt{31}\sqrt{7}-\frac{21}{2}\right]$

B $\left[x=(-10)\right]$

C $\left[x=(-8),x=4\right]$

23. Select equivalent expressions AND solve.

$$\sqrt{-2\,x+7} = -3\,x+3$$

A $\left[x = -\frac{1}{4}i\,\sqrt{3}+\frac{5}{4}, x = \frac{1}{4}i\,\sqrt{3}+\frac{5}{4}\right]$

B $\left[x = -\frac{1}{18}i\,\sqrt{167}+\frac{11}{18}, x = \frac{1}{18}i\,\sqrt{167}+\frac{11}{18}\right]$

C $\left[x = -\frac{1}{9}\,\sqrt{23}\sqrt{2}+\frac{8}{9}\right]$

D $\left[x = -\frac{1}{2}i\,\sqrt{67}-\frac{15}{2}, x = \frac{1}{2}i\,\sqrt{67}-\frac{15}{2}\right]$

E $\left[x = -\frac{1}{2}i\,\sqrt{79}-\frac{9}{2}, x = \frac{1}{2}i\,\sqrt{79}-\frac{9}{2}\right]$

F none of these

24. Select equivalent expressions AND solve.

$$x+\frac{4}{x^2+2}+\frac{1}{x-2}+2 = \frac{x^2+3\,x+2}{x+1}$$

A $\left[x = -i\,\sqrt{5}+1, x = i\,\sqrt{5}+1\right]$

B $\left[x = -\sqrt{10}-2, x = \sqrt{10}-2\right]$

C $\left[x = \left(\frac{13}{4}\right)\right]$

25. Suppose we define $x\heartsuit y$ to be $|x-y|$ for any real numbers x and y. Select the true statement/s

A

$$x\heartsuit 0 = x$$

for all real x

B

$$x\heartsuit y = y\heartsuit x$$

for all real x and y

C

$$x\heartsuit x = 0$$

for all real x

D

$$x\heartsuit y > 0$$

if $x \neq y$

E

$$2(x\heartsuit y) = 2y\heartsuit 2x$$

for all real x and y

F none of these