$\therefore dSE = F(M_{SE}) - F(M)$

$\Rightarrow dSE = b^2(x_p+2)^2 + a^2(y_p-\frac{3}{2})^2 - a^2b^2 - b^2(x_p+1)^2 - a^2(y_p-\frac{1}{2})^2 + a^2b^2$

$= b^2(x_p^2+4x_p+4) + a^2(y_p^2-3y_p+\frac{9}{4}) - b^2(x_p^2+2x_p+1)$

$- a^2(y_p^2-y_p+\frac{1}{4})$

$= b^2x_p^2 + 4b^2x_p + 4b^2 + a^2y_p^2 - 3a^2y_p + \frac{9a^2}{4} - b^2x_p^2 - 2b^2x_p$

$- b^2 - a^2y_p^2 + a^2y_p - \frac{a^2}{4}$

$\therefore dSE = 2b^2x_p + 3b^2 - 2a^2y_p + 2a^2$

$\therefore dinit = 4b^2 + a^2 + 8b^2x_p - 4a^2y_p$

$\therefore dE = 8x_pb^2 + 12b^2$

$\therefore dSE = 8a^2 + 12b^2 + 8b^2x_p - 8a^2y_p$

Now,

```
void MidPointEllipse (int a, int b, int xp, int yp, int value)
{   int dx = 2*a*a*yp;
    int dy = -2*b*b*xp;
    int dinit = a*a + 4*b*b - 4*a*a*yp + 8*b*b*xp;
    int dE = 12*b*b + 8*b*b*xp;
    int dSE = 8*a*a + 12*b*b + 8*b*b*xp - 8*a*a*yp;
    EllipsePoint (xp, yp, value);
    while (dx > dy) { if (dinit < 0) { dinit = dinit + dE;
                                       xp++; }
                      else { dinit = dinit + dSE;
                             xp++;
                             yp--; }
                      EllipsePoint (xp, yp, value); }
}
```