$\therefore d_{init} = \left(\frac{dy}{2} - dx\right)2 = dy - 2dx$

$\therefore d_N = -2dx$

$\therefore d_{NE} = (dy - dx)2 = 2dy - 2dx$

Now,

```
void MidPointLine (int x0, int y0, int x1, int y1, int color)
{
  int dx = x1-x0 , dy = y1-y0 ;
  int dinit = dy - 2 * dx ;
  int dN   = -2 * dx ;
  int dNE  = 2 * dy - 2 * dx ;
  int x = x0 , y = y0 ;
  WritePixel ( x, y, color) ;
  while ( y < y1 ) {
      if (dinit >= 0) {
          dinit += dN ;
          y++ ; }
      else{
          dinit += dNE ;
          x++ ;
          y++ ;
          }
      WritePixel (x, y, color); }
}
```

For → Zone-3: Here,

$$F(x) = Ax + By + c$$

$$F(P) = F(x_p, y_p) = Ax_p + By_p + c$$