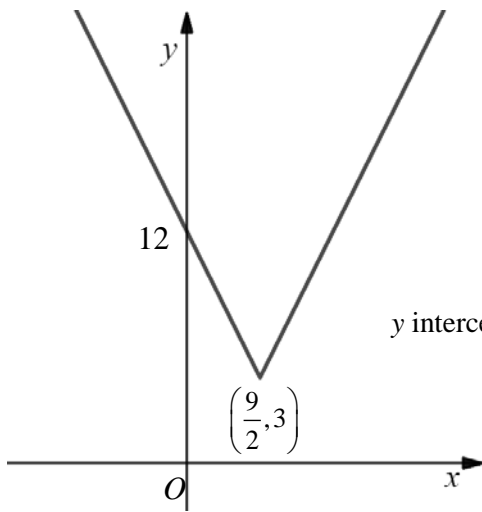


10 (a)



V Shape

M1

1.1b

y intercept at 12 or vertex at $\left(\frac{9}{2}, 3\right)$

B1

1.1b

Completely correct

A1

1.1b

(3)

(b)

Attempts to solve $3x+1=9-2x+3$

M1

1.1b

$$x = \frac{11}{5} \text{ only}$$

A1

2.1

(2)

(c)

Deduces that it will not meet if $k \dots -2$

B1

2.2a

Attempts to find the value of k using their $\left(\frac{9}{2}, 3\right)$

M1

3.1a

$$3 = k \times \frac{9}{2} + 1 \Rightarrow k =$$

$$-2, k < \frac{4}{9}$$

A1

3.2a

(3)

(8 marks)

Notes:

(a)

See scheme

(b)

M1: Attempts to solve $3x+1=9-2x+3$. (There may also be an attempt to solve $3x+1=2x-9+3$ which can be ignored for this mark.)

A1: $x = \frac{11}{5}$ **only.** Extra solutions (unless deleted) will be penalised.

(c)

B1: Deduces that they cannot meet if the value of k is greater than or equal to -2 . This may be awarded within an inequality. Condone $k > -2$ for this mark

M1: Attempts to find the gradient of the line with intercept 1 that passes through their minimum point.

A1: $-2, k < \frac{4}{9}$