

IA Test #2A

Group 4

1. $\frac{(x+5)(x-4)}{(2x-1)(x+5)} = \frac{x-4}{2x-1}, x \neq \frac{1}{2}, -5$

Both sides

2. $\frac{x+4}{x-4} \cdot \frac{(x-4)(x-1)}{(x+4)(x-1)} = 1$

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

4. $(3x-1)(x+2) = 0 \quad x = \frac{1}{3}, -2$

5. $\left(\frac{\frac{1}{y} + \frac{1}{x}}{\frac{1}{y^2} - \frac{1}{x^2}}\right) \frac{x^2y^2}{x^2y^2} = \frac{x^2y + xy^2}{x^2 - y^2} = \frac{xy(x+y)}{(x-y)(x+y)} = \frac{xy}{x-y}$

6. $\left(\frac{1}{3} + \frac{1}{2}(2x+3) = \frac{7}{3}\right) \cdot 6 \quad 2 + 3(2x+3) = 14$
 $6x + 9 = 12 \quad 6x = 3 \quad x = \frac{1}{2}$

7. $(x + \frac{15}{x} = 8) \cdot x \Rightarrow x^2 + 15 = 8x \quad (x-3)(x-5) = 0$
 $x^2 - 8x + 15 = 0 \quad x = 3, 5$

8. $\left[\frac{8}{(x+2)(x-2)} = \frac{x}{x-2} - \frac{2}{x+2}\right] (x+2)(x-2) \quad x^2 - 4 = 0$
 $8 = x(x+2) - 2(x-2) \quad x = \pm 2$
 $8 = x^2 + 2x - 2x + 4 \quad \therefore \text{no solution}$

9. $r \cdot t = w$

M	$\frac{1}{8}$	x	$\frac{x}{8}$
J	$\frac{1}{6}$	x	$\frac{x}{6}$

 $24\left(\frac{x}{8} + \frac{x}{6} = 1\right) \quad 7x = 24$
 $3x + 4x = 24 \quad x = \frac{24}{7} = 3\frac{3}{7} \text{ hrs}$

10. $r \cdot t = d$

C	x+2	$\frac{5}{x+2}$	5
A	x	$\frac{4}{x}$	4

 $\frac{5}{x+2} = \frac{4}{x} \quad x = 8 \text{ mph Ashley}$
 $5x = 4x + 8 \quad 10 \text{ mph Corrine}$

11.

$$r \cdot t = d$$

up	$20-x$	$\frac{48}{20-x}$	48
down	$20+x$	$\frac{48}{20+x}$	48

$$\left(\frac{48}{20-x} + \frac{48}{20+x} = 5 \right) (20-x)(20+x)$$

$$48(20+x) + 48(20-x) = 5(400-x^2)$$

$$960 + 960 = 2000 - 5x^2$$

$$1920 = 2000 - 5x^2$$

$$-80 = -5x^2$$

$$x^2 = 16$$

$$x = 4 \text{ mph}$$

12.

$$t = \frac{k}{5}$$

$$3 = \frac{k}{65}$$

$$k = 195$$

$$t = \frac{195}{80} = 2 \frac{2}{16} \text{ hrs}$$

$k = 195$ is the distance between cities.

13.

$$t = \frac{k}{n}$$

$$11 = \frac{k}{5} \Rightarrow k = 55$$

$$t = \frac{55}{10} = 5 \frac{1}{2} \text{ hrs}$$

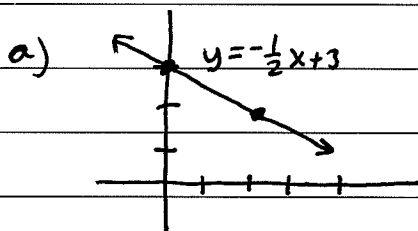
14.

$$x + 3y = 6$$

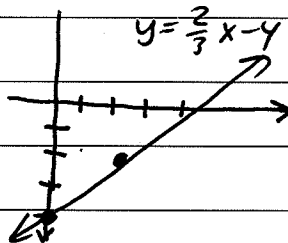
$$\frac{8}{3} + 3\left(\frac{10}{9}\right) = \frac{8}{3} + \frac{10}{3} = \frac{18}{3} = 6$$

So, yes, it is a solution.

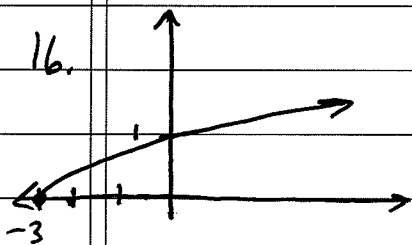
15.



b)



16.



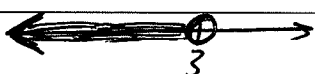
17.

a) $-5 \leq x < 2$



$$\{x \mid -5 \leq x < 2\} \quad [-5, 2)$$

b) $x < 3$



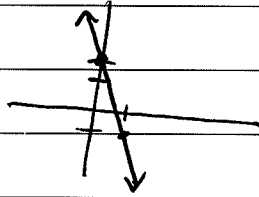
$$\{x \mid x < 3\} \quad (-\infty, 3)$$

18 a) yes b) no

$$\begin{aligned} 19 \text{ a) } f(-1) &= 3(-1)^2 - (-1) + 1 \\ &= 3 + 1 + 1 \\ &= 5 \end{aligned}$$

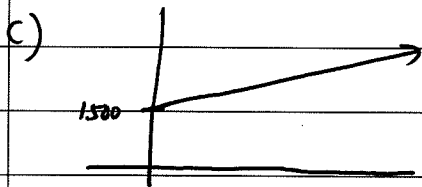
$$\begin{aligned} \text{b) } g(-3) &= -(-3)^2 - (-3) - 5 \\ &= -9 + 3 - 5 \\ &= -11 \end{aligned}$$

$$\begin{aligned} 20. \quad f(x) &= -3x + 2 \\ x\text{-int: } & \left(\frac{2}{3}, 0\right) \\ y\text{-int: } & (0, 2) \end{aligned}$$



$$21. \text{ a) } f(x) = 1500 + .1x$$

$$\text{b) } f(2500) = 1500 + .1(2500) = \$1750$$



$$\text{d) } 5000 = 1500 + .1x$$

$$3500 = .1x$$

$$x = 35,000 \text{ in sales}$$

$$22. \quad 5y - 2x = 7 \quad m = \text{slope} = \frac{2}{5}$$

$$5y = 2x + 7 \quad y\text{-int is } (0, 7/5)$$

$$y = \frac{2}{5}x + \frac{7}{5}$$

$$23. \quad \frac{131300 - 122200}{2004 - 2003} = 9100$$

$$\begin{aligned} 24. \quad y - 131300 &= 9100(x - 2004) \\ y - 122200 &= 9100(x - 2003) \end{aligned} \Rightarrow f(x) = 9100x - 18105100$$
$$f(2010) = 185,900$$

$$\begin{aligned} 25. \quad -2x - 3y &= 4 & m &= -\frac{2}{3} \\ -3y &= 2x + 4 & m_{\perp} &= \frac{3}{2} \\ y &= -\frac{2}{3}x - \frac{4}{3} \end{aligned}$$

$$\begin{aligned} y + 3 &= \frac{3}{2}(x - 2) \\ \text{or} \\ y &= \frac{3}{2}(x - 2) - 3 \\ \text{or} \\ y &= \frac{3}{2}x - 6 \end{aligned}$$