

Name:

Test # 4

CA

Date:

Key

$$1. \quad 5x^3 - 4x^2 + 2x + 3$$

↑
cubic term

$$\boxed{5}$$

$$\boxed{4}$$

$$6. \quad f(x) = x^2 + 2x - 8$$

$$f(-1) = (-1)^2 + 2(-1) - 8 = 1 - 2 - 8 = -9$$

$$f(-4) = (-4)^2 + 2(-4) - 8$$

$$= 16 - 8 - 8 = 0$$

$$\frac{-9 - 0}{-1 - (-4)} = \frac{-9}{-4} = \frac{9}{4} = \boxed{-3} \boxed{2}$$

$$2. \quad y = 3^x$$

$$3^{-2} = \frac{1}{3^2} = \frac{1}{9}$$

$$\boxed{(-2, \frac{1}{9})}$$

$$\boxed{2}$$

$$7. \quad f(x) = 2^x$$

draws most

$$\boxed{4}$$

$$3. \quad \frac{(3x^2)^4}{9x^3} = \frac{3^4 x^8}{9x^3}$$

$$= \frac{81x^8}{9x^3}$$

$$= \frac{3^4 x^5}{3^2 x^3} = \frac{3^2 x^2}{1} = 9x^2$$

$$\boxed{4}$$

$$8. \quad ax + 5x - 4 = 10$$

$$+4 +4$$

$$ax + 5x = 14$$

$$x(a+5) = 14$$

$$\boxed{x = \frac{14}{a+5}}$$

$$\boxed{3}$$

$$4. \quad 3x^3 - 2x^2 - x + 2$$

$$+ \quad 4x^2 + 3x - 6$$

$$\boxed{3x^3 + 2x^2 + 2x - 4}$$

$$\boxed{3}$$

$$9. \quad 2y = 3x - 6$$

$$y = \frac{3}{2}x - 6$$

$$m_1 = -\frac{2}{3} \quad (3, 2)$$

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

$$\boxed{y+2 = -\frac{2}{3}x+2}$$

$$\boxed{1}$$

$$5. \quad x^3 - 9x = 0 \quad \boxed{\{0, 3, -3\}}$$

$$x(x^2 - 9) = 0$$

$$x(x-3)(x+3) = 0$$

$$x=0 \quad x=3 \quad x=-3$$

$$\boxed{4}$$

$$10. \quad y = 10 + 0.75x$$

linear

$$\boxed{1}$$

21.

largest y-intercept

$$f(x) = 2x^2 + 12$$

$$f(0) = 2(0)^2 + 12$$

$$\boxed{12}$$

2

23.

68, 72, 90, 93, 75, 78, 91, 67

range: max - min

$$93 - 67$$

$$\boxed{26}$$

3

22. causal relationship

Speed and time it takes to reach destination

3

24.

$$y = x^2 + 8x + 15$$

$$0 = (x+3)(x+5)$$

$$\begin{array}{l|l} x+3=0 & x+5=0 \\ x=-3 & x=-5 \end{array}$$

$$\boxed{x=-3, x=-5}$$

1

Part II

25.

$$(x-5)(2x+8)$$

$$2x^2 - 10x + 8x - 40$$

$$\boxed{2x^2 - 2x - 40}$$

x-5



2x+8

26.

$$f(x) = 3x^2 + 4x - 2$$

$$f(-4) = 3(-4)^2 + 4(-4) - 2$$

$$= 3 \cdot 16 - 16 - 2$$

$$\boxed{= 30}$$

27.

$$\begin{array}{r} 3x + 2y = 4 \\ -2y \quad -2y \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{4-2y}{3}$$

$$x = \frac{4-2y}{3}$$

28.

$$g(x) = x^2 + 6x + 4$$

max

$$x = -\frac{b}{2a} \quad \begin{array}{l} a=1 \\ b=6 \\ c=4 \end{array}$$

$$x = -\frac{6}{2(1)}$$

$$x = -3$$

$$\begin{aligned} g(-3) &= (-3)^2 + 6(-3) + 4 \\ &= 9 - 18 + 4 \\ &= -5 \end{aligned}$$

$$\begin{array}{l} \text{min}(-3, -5) \\ \text{min value} \\ -5 \end{array}$$

29.

$$C(t) = 10,450 (.80)^t$$

$$C(5) = 10,450 (.80)^5$$

$$\$ 3424.26$$

$$\approx \$ 3424.00$$

30.

12, 14, 8, 9, 8, 16, 8, 13, 22, 19 mean 12.9
 8, 8, 8, 9, 12, 13, 14, 16, 19, 22 med 12.5
 mode 8

$$\bar{X} = 12.9 \quad S_x = 4.9$$

$$\text{med} = 13, Q_1 = 8, Q_3 = 16$$

IQR = 8

data is skewed right

31.

$$3x^2 + 3x - 6 = 0$$

$$x^2 + x - 2 = 0$$

$$(x+2)(x-1) = 0$$

$$\begin{array}{r|l} x+2=0 & \\ -2 & -2 \\ \hline x=-2 & \end{array}$$

$$\begin{array}{r|l} x-1=0 & \\ +1 & +1 \\ \hline x=1 & \end{array}$$

$\{-2, 1\}$

32.

$$f(x) = x^2 - 5x$$

$$f(x) = x(x-5)$$

$$0 = x(x-5)$$

$$\begin{array}{r|l} x=0 & \\ x-5=0 & \\ +5 & +5 \\ \hline x=5 & \end{array}$$

0 and 5

Part III

33.

Let $x = \text{gig}$ $p(x) = 20 + 4(x - .5)$
 $c(x) = 10x$

$$20 + 4(x - .5) = 10x$$

$$20 + 4x - 2 = 10x$$

$$18 = 6x$$

$$3 = x$$

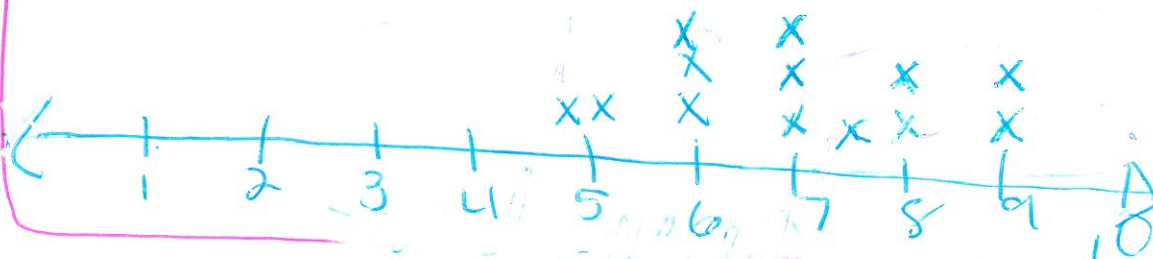
b) more than 3 gigabytes
~~3000 megabytes~~

34.

4.8, 5.0, 8.2, 6.7, 9.0, 7.4, 5.8, 6.7, 8.2, 9.0

TIME in mile run 5.8, 6.7, 5.8

a)



b) $\bar{x} = 6.9$ minutes

Part III

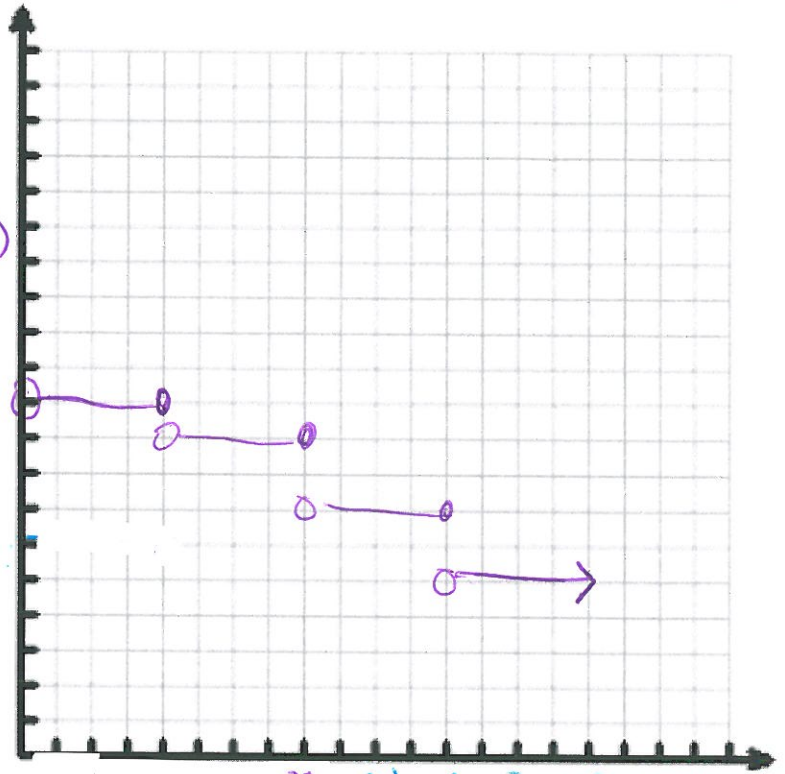
35.

$$15 \text{ lbs} @ 25/\text{lb} = \$375$$

b) $375 + 10.8(15)$
 $\$405$

$\$/\text{lb}$

30
25
20
15
10
5



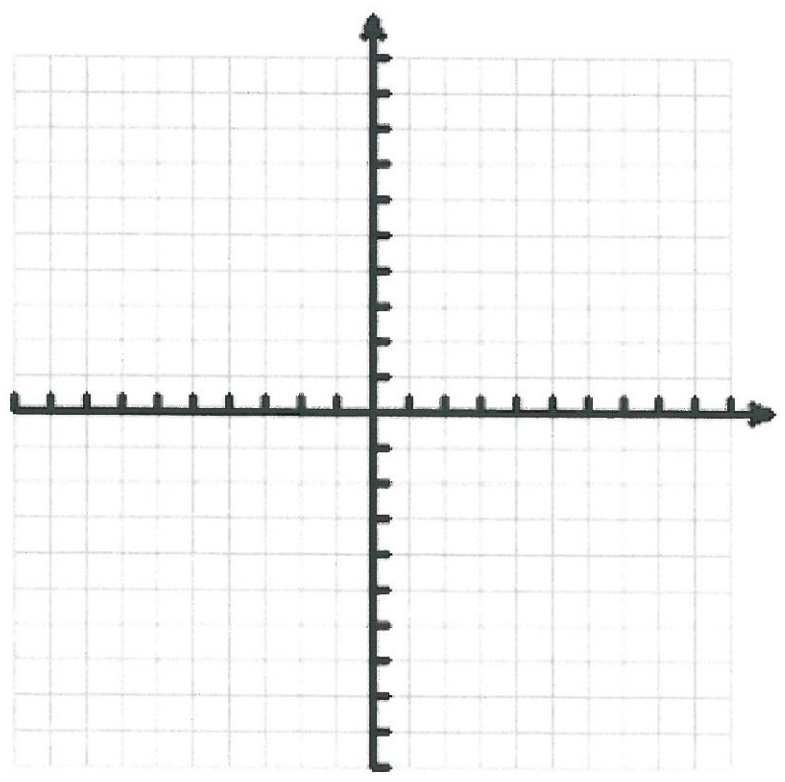
weight/lb

36.

$$y_1 = 127 - 2x$$

$$y_2 = 122.4$$

put graphs in y_1 and y_2 . calculate point of intersection
 $(2.3, 122.4)$



$$x \approx 2.3$$

Part IV

37.

Similarity: both increasing
on $x \geq 0$ #

Difference: Domains different
Ranges different

$p(x) \quad y \geq 0$
 $q(x) \quad \mathbb{R}$

