MATH 1020 Course Review Answers

Directions: *Some of the questions on this review may require the use of the graphing calculator; others may require you to show all work. If an algebraic answer is required and work is not shown, you may not receive full credit on the final exam. On the final exam you must show work in the spaces provided and show graphs on the grids provided. Partial credit may be awarded on most problems. Reduce fractions to lowest terms. The final exam counts as 25% of your overall grade and contains 200 possible points. You will have 1 hour and 50 minutes to complete the final exam, but this review will most likely take you at least twice as long to complete.*

1)
   a) Rational : $\{2, 5, 0, \frac{1}{3}, 1.12, 1.\bar{3}, 3.14, -13\}$
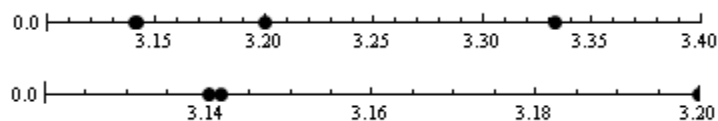   b) Natural : $\{2, 5\}$
   c) Integer : $\{2, 5, 0, -13\}$

2)
   a) Positive : $\left\{\frac{-2}{-3}, \frac{5}{1.12}, \pi, \frac{15}{3}, 1.\overline{345}, \frac{2\pi}{\pi}\right\}$
   b) Negative : $\left\{-2^2, -7, \frac{13}{-3}\right\}$

3)

4) c & f
5) d & f
6) a, b, e & f
7) C
8)
   a) $\frac{3}{\sqrt{14}}$ b) -34 c) $\frac{1}{4}$

9) b & d
10) b
11) $\frac{128}{3}$
12)
   a) $\frac{49}{36}$ b) 1.3611

13) Yes : $3 \cdot 0 - 12 = -3(4 - 0)$
14)
   a) $\frac{43}{7}$ b) $-\frac{39}{22}$
   c) No solution   d) All real numbers

15)
   a) $f = \frac{C - 4h - 4p}{9}$ *grams*   b) $f = \frac{346 - 4(46) - 4(18)}{9} = 10$ *grams*

16)

    a) $S = 2\pi \cdot 2.7^2 + 2\pi \cdot 2.7 \cdot 11.3 \; m^2 = 75.6\pi \; m^2 \approx 237.50 \; m^2$

    b) $h = \dfrac{S - 2\pi r^2}{2\pi r} \; ft$

    c) $h = \dfrac{890 - 2\pi 7^2}{2\pi r} \; ft \approx 13.24 \; ft$

17)

    a) $2L + 2\dfrac{L}{2} = 2L + L = 3L$

    b) $\$0.08d$

    c) $\$89.95y$

    d) $\dfrac{1}{2}\dfrac{W}{2} W = \dfrac{W^2}{4}$

18) $W = 12ft \; \& \; L = 20ft$

19) $4ft, 8ft,$ and $33ft$

20) $\$452.38$

21) $\$2255.43$

22) $32°, 64°, 84°$

23) 11.94%

24) $32.5 \; miles$

25)

    a)

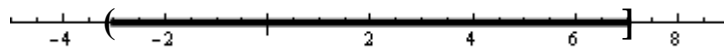   i. $\{r \mid -3 < r \le 7\}$

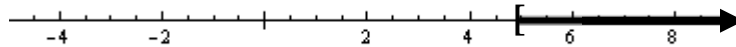   ii.

        iii. $(-3, 7]$

    b)

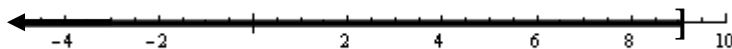   i. $\{x \mid 5 \le x\}$

        ii.

        iii. $[5, \infty)$

26)

    a) $\left(-\infty, -\dfrac{5}{12}\right]$ b) $\left(-\infty, -\dfrac{18}{17}\right)$

27)

    a)

    b)

28) Negative infinity is ALWAYS written on the left.

29) Infinity ALWAYS has a parenthesis.

30) Yes : $2(-5) - 5(-4) = -10 + 20 = 10$. The coordinates satisfy the equation.

$(5, 0), (0, -2), (10, 2), \& (-10, -6)$

31)

a)

Hours (h)	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
Charge (C)	6.25	7.81	9.38	10.94	12.5	14.06	15.63	17.19	18.75

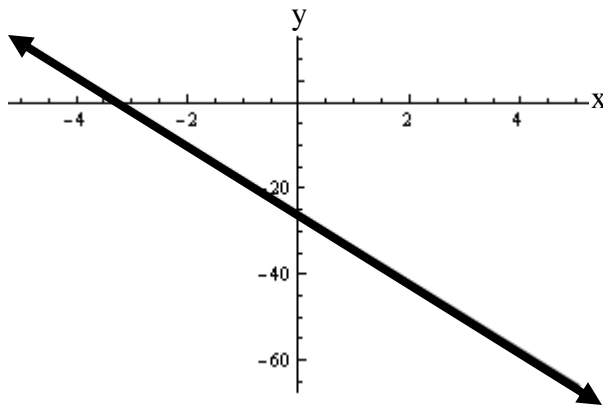b) $6.25\frac{\$}{hr} * 8hr = \$50$

32) $(-2, 0) \& (0, 4)$

33)

a) Yes, coordinates satisfy equation

b) No, $0 \neq 3(3)$

c) No, $0 \neq 2(3) - 2$

d) No, $0 \neq 2$

34)

35) A vertical line as no slope or its slope is undefined. On the other hand, a horizontal line has a slope. The measurement of its slope is 0.

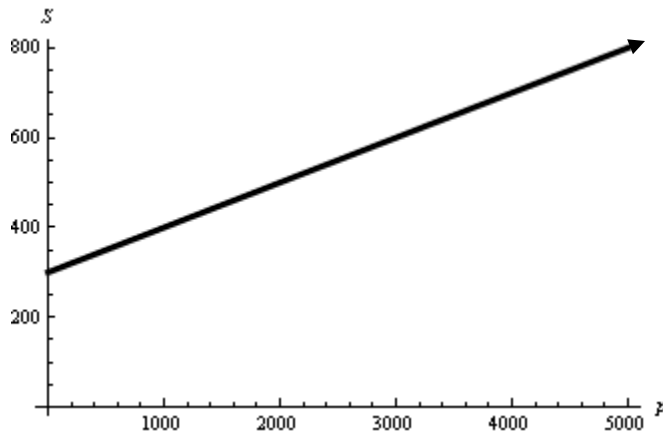36) $y = -\frac{5}{4}x + \frac{40}{3}$ Slope $= -\frac{5}{4}$ $\left(0, \frac{40}{3}\right)$

37)

a) A salesperson who sells $1000 of hardware each week will earn a weekly salary of $400.

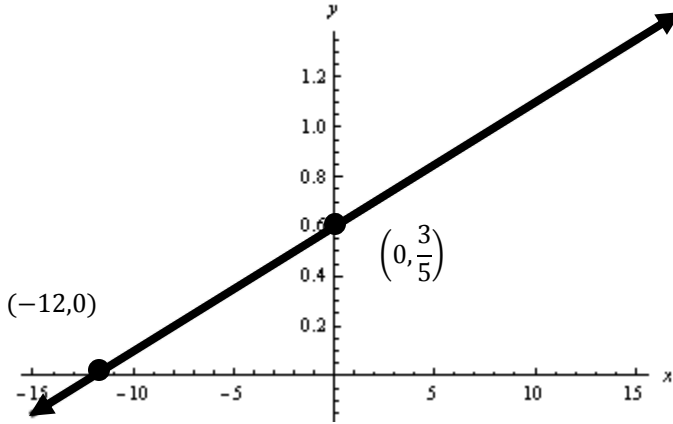b) $535

c) $4500

d)

e) $[0, 5000] \times [0, 800]$

38)
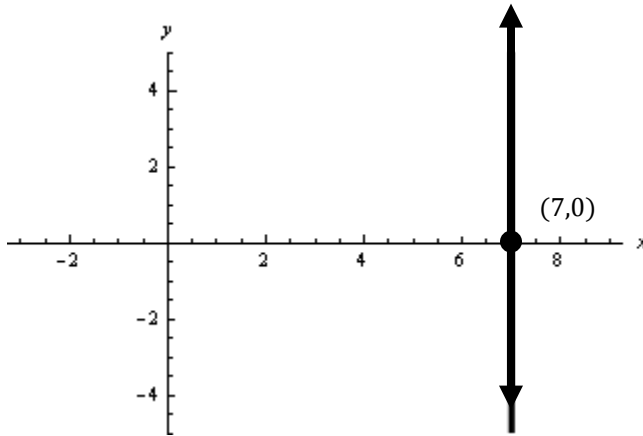   a) $(0, 500)$
   b) $(750, 0)$
   c)   466 chairs

39)
   a) Yes   b) Yes   c) No
   d) Yes   e) No   f) Yes

40)
   a)

$\left(0, \dfrac{3}{5}\right)$
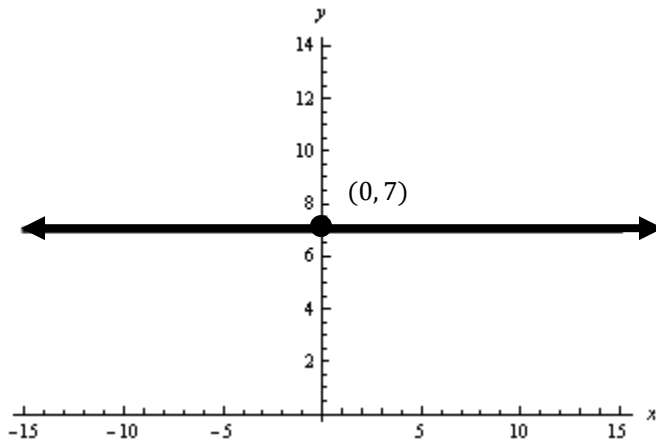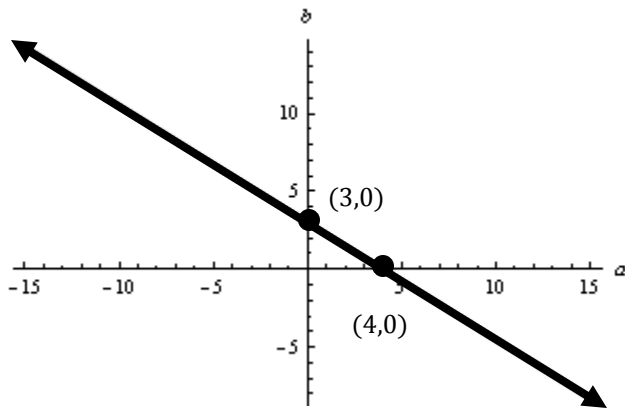
$(-12,0)$

   b)

$(7,0)$

   c)

$(0, 7)$

d)

41) $-\frac{3}{4}$

42) $-\frac{5}{36}$

43) B

44) A

45) Slope between $(4, -8)$ & $(1, -4)$ is $-\frac{4}{3}$

Slope between $(1, -4)$ & $(-4, -2)$ is $-\frac{2}{5}$

46) Slope between $(-4, -7)$ & $\left(\frac{1}{2}, 2\right)$ is 2

Slope between $\left(\frac{1}{2}, 2\right)$ & $(6, 13)$ is 2

Slope between $(6,13)$ & $(-4, -7)$ is 2

47)
   a) $y = 3$ b) $x = 5$ c) $y = 3$ d) $x = 5$

48) $y = 45x + 2250$;   \$2925