Review for Test #3 over Sect 2.4 - 2.7

Work all the problems on a separate piece of paper showing all steps.

Solve the inequality. Write the solution set in a) interval notation, b) set-builder notation and c) graph the solution set:

1) $-5x + 4 > 2x + 18$

2) $\frac{3}{7}x + 4 \geq -17$

3) $-4x + 2(x - 3) \leq 4x - (3 + 5x) - 7$

4) $-4 < 3x + 2 \leq 17$

Solve for the indicated variable:

5) Solve $y = mx + b$ for b.

6) Solve $m = \frac{\Delta y}{\Delta x}$ for Δy.

7) Solve $S = d - vt$ for d.

8) Solve $V = \pi r^2 h$ for π.

9) Solve $S = \frac{1}{2}at^2$ for a.

10) Solve $4x + 3y = 12$ for y.

11) Solve $C = \frac{QV - PT}{F}$ for T.

12) Solve $A = \frac{1}{2}(b_1 + b_2)h$ for b_2.

A) Write an equation or inequality and B) solve. Be sure you indicate what your variable represents (Use $\pi \approx 3.14$):

13) Five less the product of negative three and a number is two more than the same number.

14) Find three consecutive integers whose sum is eighty-seven.

15) A 58-inch board is cut into three pieces. The first piece is 1 inch less than three times the second piece and the third piece is five more than twice the second. Find the length of each piece.

16) The volume of a cone is $V = \frac{1}{3}\pi r^2 h$. Solve the formula for h and if the radius is 4.9 cm and the volume is 376.957 cm^3, find the height.

17) If Joe received a 4.5% commission on the sale of $180,000 home in Canyon Lake, how much was his commission?

18) Juan bought a washer and dryer for $550. If the washer was $50 less than twice the dryer, find the cost of each.

A) Write an equation or inequality and B) solve. Be sure you indicate what your variable represents (Use π ≈ 3.14):

19) The quotient of three times a number and seven is forty-two more than twice the same number.

20) The height of a triangle is fixed at $\frac{30}{7}$ inches. For what lengths of the base is the area at most 235.2 in^2?

21) A basketball auditorium increased its 9,000 seating capacity by 18%. How many seats were added to the auditorium?

22) If Juan paid $31.50 in sales tax on a $400 stereo system, what was the sales tax rate?

23) Find three consecutive even integers such that twice the first integer plus four times the third integer is thirty more than five times the second integer.

24) In one academic year, Juan taught two more than three times as many classes at St. Philip's College as he taught at Our Lady of the Lake University. If he taught a total 14 classes, how many classes did he teach at each school?

25) A computer system that sold for $2,400 one year ago can now be bought for $1,800. What percent decrease does this represent?

26) If the sum of twice a number and six, subtracted from three times the same number is fourteen, find the number.

27) Find three consecutive odd integers such that three times the first plus four times the second minus the third is two hundred two.

28) The width of a rectangle is one less than twice the length. If the perimeter is 46 inches, find the width of the rectangle.

29) If the circumference of a circle is approximately 59.66 m, find the radius. Then find the area of the circle.

30) The Coyote (carnivorous eatti) needs $6120 to buy a pair of Acme® Super Jet Powered Roller Skates to catch the Road Runner (incredulous Superious Speeddi). If he decides to withdraw some money from his IRA where he will receive a 10% penalty for early withdraw, how much should he withdraw so that he gets $6120 after the penalty?

A) Write an equation or inequality and B) solve. Be sure you indicate what your variable represents (Use π ≈ 3.14):

31) If twice the difference of eight and a number is equal to the product of six and the same number, find the number.

32) The second angle of a triangle is four times the first angle. If the third angle is 30˚ more than twice the sum of the first and second angle, find the angles.

33) Juanita scored 75%, 82% and 78% and her first three tests. What possible scores can she get on the fourth test to have at least an 80% average?

34) Oscar the Grouch had to take a 9% pay cut since the Federal Government is cutting back on its financial support of PBS. If his new salary is $13.65 per hour, what was his salary before the pay cut?

35) If $650 is invested at 11.5% annual interest for three quarters of a year, find the total amount in the account.

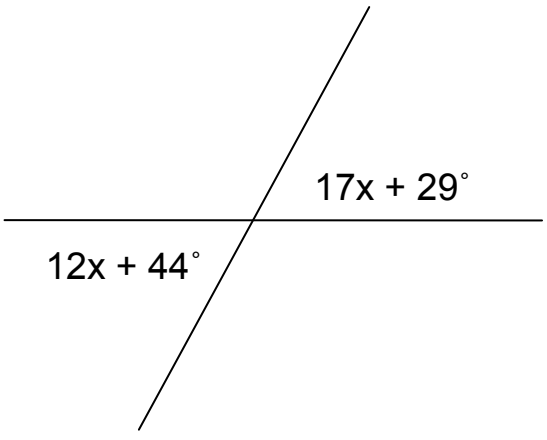
36) If the area of a trapezoid is 78 m^2 when the height is 10.4 meters and b_2 is 2.4 meters less than twice b_1, find b_1 and b_2.

37) If the measure of an angle is two less than three times the measure of its complement, find the measure of the angle.

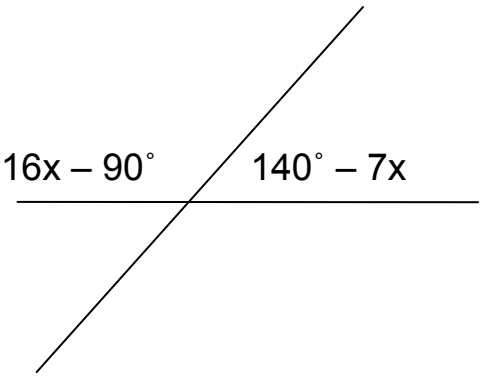
38) Flint has to repay $7,182.50 for the principal he borrowed at 8.4% for 450 days. How much was the principal?

Given the diagrams below, find x and the indicated angles:

39)



40)



A) Write an equation or inequality and B) solve. Be sure you indicate what your variable represents (Use π ≈ 3.14):

41) Two angles are supplementary angles. If the first angle is eight more than triple the second angle, find the angles.

42) The original Macintosh can operate safely between the temperatures of 10° C and 40° C. Find the equivalent range of temperatures (to the nearest whole number) in Fahrenheit using $C = \frac{5}{9}(F - 32^\circ)$.

Without working the problem, use critical thinking to determine which answers are *unreasonable*:

43) The area of a rectangle.

a) $36\ in^2$ b) $-1.7\ in^2$ c) $45\ ft^2$ d) $0.0016\ m^2$ e) $-3\ yd^2$

44) The current age of Mike's dog.

a) – 3 years b) 18 months c) 52 years d) 12 years e) 3 months

45) The temperature in Fort Yukon, Alaska in January.

a) – 12° F b) 15° F c) – 125° F d) 95° F e) 0° F

46) Number of children the Johnson family has.

a) 4 kids b) 3.8 kids c) – 6 kids d) 2 kids e) none

In the problem below, the student has made an error. Use critical thinking to find and correct the error. Then finish working the problem.

47) Juanita has five more Barbie Dolls than Sky Dancer Dolls. If she has a total of nineteen Barbie and Sky Dancer Dolls, write the equation that you would use to solve the problem and solve.

Solution:

$$S + 5 = 19$$
$$-5 = -5$$
$$S = 14$$

Juanita had 14 Sky Dancer Dolls.

In the problem below, the student has made an error. Use critical thinking to find and correct the error. Then finish working the problem.

48) Solve $F = \frac{9}{5}C + 32$ for C.

Solution:

$F = \frac{9}{5}C + 32$

$5 \bullet F = 5\left(\frac{9}{5}C + 32\right)$

$5F = 9C + 32$

$-32 = \quad -32$

$5F - 32 = 9C$

$\frac{5F - 32}{9} = \frac{9C}{9}$

$C = \frac{5F - 32^\circ}{9}$

49) The price of a laptop was marked down from \$995 to \$649. Find the percent discount (to the nearest tenth of a percent).

Solution:

$649 = p \bullet 995$

$649 = 995 \bullet p$

$\frac{649}{995} = \frac{995p}{995}$

$p = 0.6522613\ldots$

$p \approx 65.2\%$

50) Solve: $4 - 3x \geq -17.3$

Solution:

$4 - 3x \geq -17.3$

$-4 \quad = \quad -4$

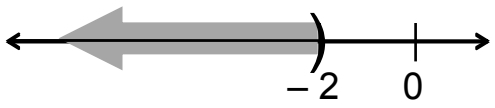
$-3x \geq -21.3$

$\frac{-3x}{-3} \geq \frac{-21.3}{-3}$

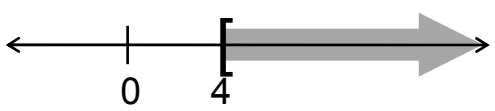
$x \geq 7.1$

The solution is $[7.1, \infty)$.

Answers:

1) a) $(-\infty, -2)$ b) $\{ x \mid x < -2 \}$ c) 

2) a) $[-49, \infty)$ b) $\{x \mid x \geq -49\}$ c) 

3) a) $[4, \infty)$ b) $\{x \mid x \geq 4\}$ c) 

4) a) $(-2, 5]$ b) $\{x \mid -2 < x \leq 5\}$ c) 

5) $b = y - mx$ 6) $\Delta y = m\Delta x$ 7) $d = S + vt$ 8) $\pi = \frac{V}{r^2 h}$ 9) $a = \frac{2S}{t^2}$

10) $y = \frac{-4x+12}{3}$ 11) $T = \frac{QV - FC}{P}$ 12) $b_2 = \frac{2A - b_1 h}{h}$ or $\frac{2A}{h} - b_1$

13) The number is – 1.5. 14) The Integers are 28, 29, and 30.

15) The lengths were 26 in, 9 in, and 23 in 16) $h = \frac{3V}{\pi r^2}$; the height is 15 cm.

17) His commission was $8,100. 18) Washer was $350 and Dryer was $200

19) The number is $-\frac{294}{11}$. 20) The length of the base is at most 109.76 inches.

21) It increased by 1620 seats. 22) The sales tax rate was 7.875%.

23) The integers are 24, 26, and 28.

24) Juan had 3 classes at OLLU & 11 classes at SPC.

25) The price decreased by 25%. 26) The number is 20.

27) The integers are 33, 35, and 37. 28) The width is 15 inches.

29) The radius is 9.5 m. The area is 283.385 m^2. 30) He withdrew $6800.

31) The number is 2. 32) The angles are 10˚, 40˚, and 130˚.

33) She must score at least an 85%. 34) His salary was $15 per hour.

35) The total amount is ≈ $706.06 36) b_1 = 5.8 m and b_2 = 9.2 m

37) The measure of the angle is 67˚. 38) The principal was $6,500.

39) x = 3˚ ; The angles are 80˚. 40) $x = 14\frac{4}{9}^\circ$; The angles are $141\frac{1}{9}^\circ$ and $38\frac{8}{9}^\circ$.

41) The measures of the angles are 137˚ and 43˚.

42) The range is between 50˚ F and 104˚ F. 43) b & e 44) a & c 45) c & d

46) b & c 47) Juanita had 7 Sky Dancer Dolls. 48) $C = \frac{5F - 160^\circ}{9}$ 49) 34.8%

50) $(-\infty, 7.1]$