

## MATH 124 - Exam 1 Review

1. Graph equations similar to 13 - 27, pg. 91
2. Solve:  $2(x - 1) + 3 = x - 3(x + 1)$
3. Solve:  $2x - \frac{2x}{7} = \frac{x}{2} + \frac{17}{2}$
4. Solve:  $\frac{3}{x+3} = \frac{5}{2x+6} + \frac{1}{x-2}$
5. When a number is decreased by 30% of itself, the result is 28. What is the number?
6. When 80% of a number is added to the number, the result is 252. What is the number?
7. One number exceeds another number by 24. The sum of the numbers is 58. What are the numbers?
8. A coupon book for a bridge costs \$30 per month. The toll for the bridge is normally \$5.00, but it is reduced to \$3.50 for people who have purchased the coupon book. Determine the number of times in a month the bridge must be crossed so that the total monthly cost without the coupon book is the same as the total monthly cost with the coupon book.
9. Solve by factoring:  $5x^2 - 20x = 0$
10. Solve by the square root property:  $3x^2 - 1 = 47$
11. Solve by completing the square:  $x^2 + 6x = -8$
12. Solve using the quadratic formula:  $3x^2 = 6x - 1$
13. Solve:  $\sqrt{6x + 1} = x - 1$
14. Solve:  $x^{\frac{3}{2}} = 27$
15. Solve using substitution:  $2x^{\frac{2}{3}} + 7x^{\frac{1}{3}} - 15 = 0$
16. Solve:  $|2x - 3| = 11$

17. Use interval notation to express the solution set and graph:

$$-4(x + 2) > 3x + 20$$

18. Use interval notation to express the solution set and graph:

$$-6 \leq \frac{1}{2}x - 4 < -3$$

19. Solve:  $|x + 3| \leq 4$

20. Solve:  $|\frac{3x-3}{9}| \geq 1$

21. If  $f(x) = \sqrt{25 - x} - 6$ , find  $f(16)$ ,  $f(-24)$ ,  $f(25 - 2x)$

22. For the piecewise function below, find  $f(0)$ ,  $f(-6)$ ,  $f(-5)$

$$f(x) = \begin{cases} x + 5, & \text{if } x \geq -5; \\ -(x + 4), & \text{if } x < -5; \end{cases} \quad (1)$$

23. Find the slope of the line passing through  $(-1, 3)$  and  $(2, 4)$

24. Write in slope-intercept form the equation of the line with slope = -5, passing through  $(-4, -2)$

25. Write in slope-intercept form the equation of the line passing through  $(-4, 2)$  and perpendicular to the line whose equation is  $y = \frac{1}{3}x + 7$

26. Write in slope-intercept form the equation of the line passing through  $(-2, -7)$  and parallel to the line whose equation is  $y = -5x + 4$

27. Graph:  $f(x) = (x - 1)^2$

28. Graph:  $f(x) = (x - 1)^2 + 2$

29. Graph:  $f(x) = -\sqrt{x + 1}$

30. Graph:  $f(x) = |x + 3| - 2$

31. Find the domain:  $f(x) = 2(x + 5)$

32. Find the domain:  $f(x) = \sqrt{x + 2}$

33. If  $f(x) = 5x + 2$  and  $g(x) = 3x - 4$ , find  $(f \circ g)(x)$ ,  $(g \circ f)(x)$ ,  $(f \circ g)(2)$