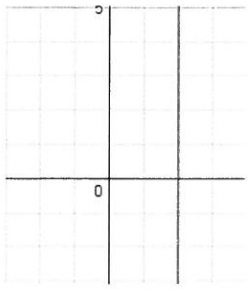
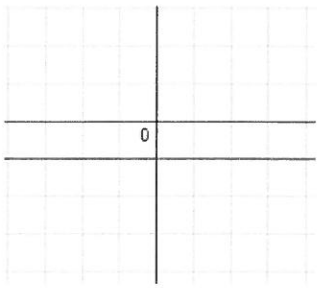
Name _____ Algebra 2E Final Exam Review

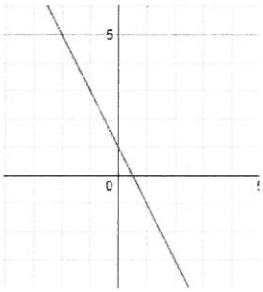
Non-Calculator Section

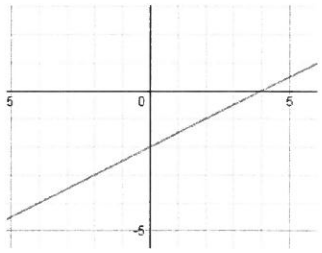
26. What is the solution of $x-3=3x+4$?

27. Write a linear equation for each of the following.

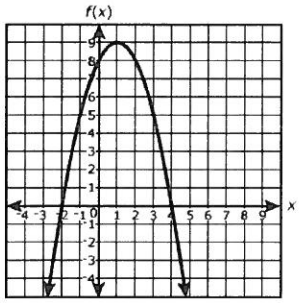
a. 

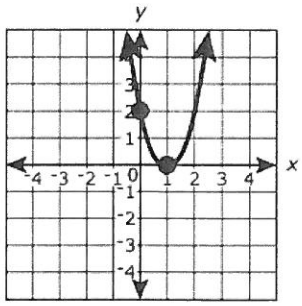
b. 

c. 

d. 

28. Write an equation for each of the following:

a. 

b. 

29. For each of the following find the y-intercept, the x-intercepts, the vertex, the axis of symmetry, and min/max.

a. $y=-x^2+9$

b. $y=3x^2+16x+21$

30. Simplify each of the following.

a. $\dfrac{\left(2a^2b\right)^3}{2a^4b^4}$

b. $\dfrac{\left(x^{-2}y^5\right)^2}{x^3y}$

31. Given $f(x)=2x^4+3x^3-2x+2$, find $f(-2)$.

32. Factor each of the following completely.

a. $4x^2-9$

b. x^4-9x^6

c. $10x^2-17x+3$

d. $x^2-21x-22$

33. What function can be obtained by translating the graph of $y=x^2$ down 2 units and right 5 units?

34. Find the mean, median, mode, and range of the data set: 3, 6, 7, 4, 1, 3, 10, 8.

35. Find the real number solutions of the equation: $2x^6-8x^4=0$

36. Evalute each of the following functions.

a. $\cos(-150^\circ)$

b. $\sin\left(-\dfrac{3\pi}{4}\right)$

c. $\sin 135^\circ$

d. $\cos\left(\dfrac{7\pi}{4}\right)$

37. Consider the rational function $g(x)=\dfrac{x^2-9}{x^2+2x+1}$. Write the equations of the horizontal and vertical asymptotes.

38. Let $f(x)=x^2+3x+6$ and $g(x)=2x^2-5$. Find:

a. $f(x)+g(x)$

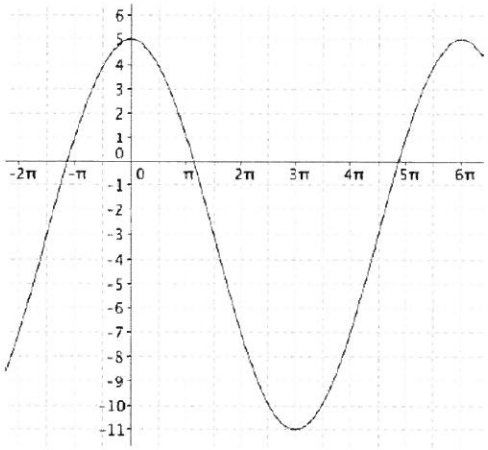
b. $f(x)-g(x)$

c. $f(x)\cdot g(x)$

d. $g(f(x))$

39. Simplify $\left(\sqrt{2}+i\sqrt{3}\right)\left(\sqrt{2}-i\sqrt{3}\right)$.

40. What is the equation of the function shown in the graph to the right?



41. In 2000, the world population was about 6.09 billion. During the next 13 years, the world population increased by about 1.18% each year. Write an exponential model given the population *y* (in billions), *t* years after 2000. Estimate the world population in 2005.

42. What is the range of the graph of the function $f(x)=3\sin(x)-1$?

43. Simplify each of the following expressions.

a. $7\sqrt[3]{2}-\sqrt[3]{128}$

Gross: b. $\sqrt[4]{16w^{10}}+2w\sqrt[2]{w^5}$

44. Evaluate $\ln\left(\sqrt[9]{e}\right)$.

45. Solve the equation: $7\log_3(x-2)-10=4$

46. What is the sum of the series $\sum_{i=1}^{33}(6-2i)$?

47. For a certain arithmetic sequence, $a_{18}=-59$ and $a_{21}=-71$. Write an explicit rule for the *n*th term of the sequence.

48. For a certain geometric sequence, $a_2=28$ and $a_5=1792$. Write an explicit rule for the *n*th term of the sequence.

49. Convert 76° to radians.

50. Convert $\frac{5\pi}{3}$ to degrees.