Essential Skills: ALG 2 Cumulative Review #1: 2011 Fall Final

1. Use the parent graph $f(x) = x^2$ to complete each of the following for $g(x) = -3(x+4)^2 + 11$.

a) What are the coordinates of the vertex? _____

b) Is g(x) a reflection of f(x) over the x-axis, the y-axis, or neither? _____

c) What is the domain written in interval notation? _____

d) What is the range written in inequality notation? _____

e) What is the range written in interval notation? _____

f) Write g(x) in standard form. _____

g) What is the degree of g(x)? _____

h) What is the leading coefficient of g(x)? _____

i) What translation right or left does g(x) have in comparison to f(x)? _____

j) What translation up or down does g(x) have in comparison to f(x)? _____

k) What is the y-intercept? _____

l) What is the constant in h) above ? _____

m) Find the y-coordinates for the point where x = 1. _____

n) What is the name of the parent function? _____

o) Does g(x) open up or down <u>and</u> how can you tell ? _____

p) Create a new function, call it h(x), by moving g(x) up 9 units and 5 units to the left. _____

q) Does g(x) have a maximum or a minimum <u>and</u> what is it's value ? _____

r) Approximate the x intercepts of g(x) to the tenths place. _____

s) What is the equation of the axis (line) of symmetry ? _____

2. Identify <u>all of the roots</u> of each equation: Use any method.

$2x^3 - 42x + 40 = 0$ $3x^3 - 18x^2 - 9x + 132 = 0$

3. Create a polynomial function that has zeros of - 4 ,5, and 3*i*.

4. Solve the equation. Simplify the answers. $4x^2 - 5 = 3$

5. Rewrite the equation in vertex form. $x^2 - 4x - 6 = 0$

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6. Perform the indicated operation and write your answer in standard form.

a. $(-14x+17+9x^2)+(3x-45)$ b. $(7x^3+10x+5)-(x^3-4x+5)$ c. $4y(3x^2+6xy)$

d. $(x-3)(2x^2+4x-5)$ e. $(8x^3+12x^2-6x+15)\div(2x+2)$

7. Let $f(x)=3x^3-x+4$. Complete each of the following. <u>You must show all work to receive credit.</u>

a. Use synthetic division to divide f(x) by x – 4 .

b. Using your answer from above determine if x – 4 is a factor of f(x). You must explain your answer to receive credit.

c. Use synthetic substitution, <u>not direct substitution,</u> to find f (- 1).

8. Factor each of the following. Write "prime" if the problem will not factor at all. <u>You must show all work to receive credit.</u>

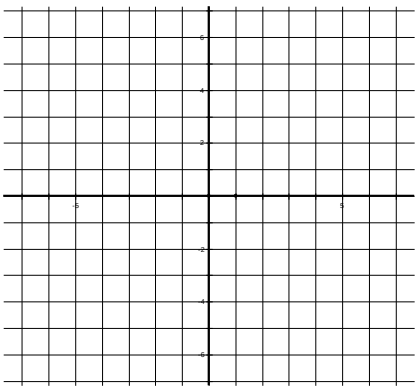
a. $3x^2-15$ b. $4x^2-3x-10$ c. $8x^3-27$ d. $9x^2-100$

e. $4xy-16x^2y+8x^2y^5$ f. $x^2-19x+34$ g. $25x^2+4$ h. $3x^3-12x-x^2+4$

9. Student Council took a survey. Of the students polled, 15% said they wanted to work the concession stand at games. 45 students were polled for the survey. How many students said they wanted to work at the games?

10. Solve. $\frac{28}{36}=\frac{g}{81}$ _____

11. Graph the line that goes through the point (1,-3) and has a slope of $\frac{-3}{2}$.



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12. Let $g(x)$ be the transformation of right 2 and down 4 of $f(x)=x^2$. Write the rule for $g(x)$.

A. $g(x)=(x-2)^2-4$
B. $g(x)=(x+2)^2-4$
C. $g(x)=(x-4)^2-2$
D. $g(x)=(x+4)^2-2$
E. $g(x)=-2x^2-4$

13. Reflect the graph of $f(x)=|2x-1|+3$ across the x-axis.

A. $g(x)=|2(-x)-1|+3$
B. $g(x)=-|2x-1|+3$
C. $g(x)=-|2x-1|-3$
D. $g(x)=|-2x+1|+3$
E. $g(x)=-|2x+1|-3$

14. Describe the parent function and its transformation: $f(x)=\sqrt{x-4}+8$

A. square root function, shift left 4, down 8
B. square root function, shift right 4, down 8
C. square root function, shift right 4, up 8
D. rational function, shift right 4, up 8
E. rational function, shift left 4, up 8

15. Describe the parent function and its transformation: $f(x)=2^{x+1}-5$

A. exponential function, shift left 1, down 5
B. square root function, shift right 1, down 5
C. quadratic function, shift right 1, up 5
D. exponential function, shift right 1, up 5
E. exponential function, shift left 1, up 5