Student: _____	**Instructor:** Garth Isaak	**Assignment:** Polynomial etc functions
Date: _____	**Course:** precalc blitzer (1)	practice diagnostic 1a
Time: _____	**Book:** Blitzer: Precalculus Essentials, 3e	

1. Find the x-intercepts of the polynomial function. State whether the graph crosses the x-axis, or touches the x-axis and turns around, at each intercept.

$f(x) = (x-2)^2(x^2-25)$

A. 2, touches the x-axis and turns around;
-5, crosses the x-axis;
5, crosses the x-axis

B. 2, touches the x-axis and turns around;
-5, touches the x-axis and turns around;
5, touches the x-axis and turns around

C. -2, touches the x-axis and turns around;
25, crosses the x-axis

D. 2, touches the x-axis and turns around;
25, touches the x-axis and turns around

2. Divide.

$$\frac{x^4-3x^3-3x^2+16x-36}{x^2-4x+4}$$

A. $x^2-8x+33+\dfrac{-160x+144}{x^2-4x+4}$

B. x^2+x-3

C. $x^2+x-3-\dfrac{24}{x^2-4x+4}$

D. $x^2-8x+33$

3. Find the vertical asymptotes, if any, of the graph of the rational function.

$$f(x)=\frac{x-4}{x(x+4)}$$

A. $x=0$ and $x=-4$

B. $x=4$ and $x=-4$

C. $x=-4$

D. no vertical asymptote

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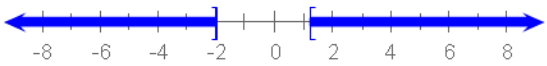
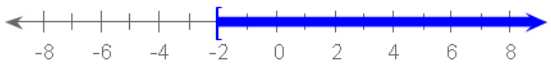
4. Solve the polynomial inequality and graph the solution set on a number line. Express the solution set in interval notation.

$(4x - 5)(x + 2) \leq 0$

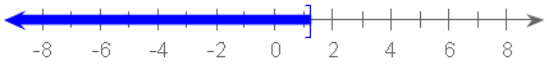
A. $(-\infty, -2] \cup [(5/4), \infty)$



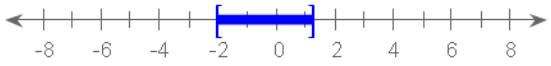
B. $[-2, \infty)$



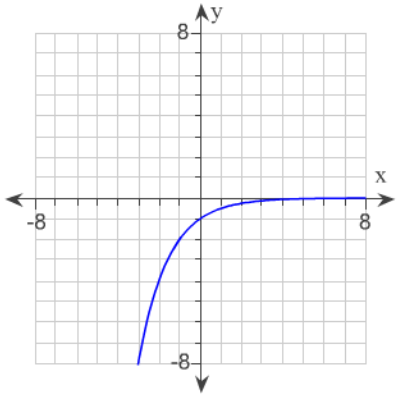
C. $(-\infty, (5/4)]$



D. $[-2, (5/4)]$



5. The graph of an exponential function is given. Select the function for the graph from the functions listed.



A. $f(x) = -2^x$

B. $f(x) = 2^x$

C. $f(x) = -2^{-x}$

D. $f(x) = 2^{-x}$

6. Evaluate the expression without using a calculator.

$\ln e^{3x}$

A. $-3x$

B. $3x$

C. e^{3x}

D. $\frac{1}{3x}$

7. Solve the equation by expressing each side as a power of the same base and then equating exponents.

$2^{(x-9)/6} = \sqrt{2}$

A. $\{21\}$

B. $\{(33/3)\}$

C. $\{12\}$

D. $\{15\}$

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1. A

2. C

3. A

4. D

5. C

6. B

7. C