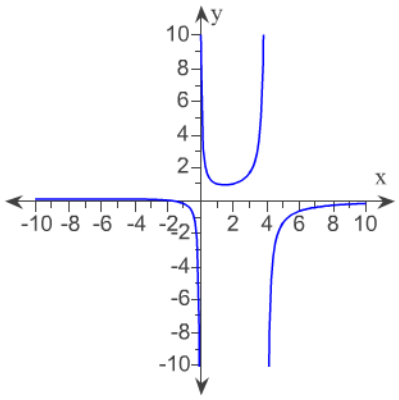
Student: _____	**Instructor:** Garth Isaak	**Assignment:** Polynomial etc functions
Date: _____	**Course:** precalc blitzer (1)	practice diagnostic 4a
Time: _____	**Book:** Blitzer: Precalculus Essentials, 3e	

1. Use the Intermediate Value Theorem to determine whether the polynomial function has a real zero between the given integers.

$f(x) = -5x^4 + 6x^2 + 9$; between -2 and -1

- A. $f(-2) = -47$ and $f(-1) = -10$; no
- B. $f(-2) = -47$ and $f(-1) = 10$; yes
- C. $f(-2) = 47$ and $f(-1) = -10$; yes
- D. $f(-2) = 47$ and $f(-1) = 11$; no

2. Use the graph of the rational function shown to complete the statement.



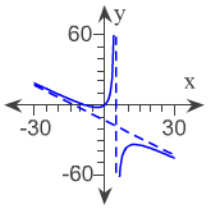
As $x \to 4^-$, $f(x) \to$?

- A. $-\infty$
- B. 0
- C. -4
- D. $+\infty$

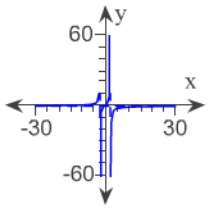
3. Graph the function.

$$f(x) = \frac{x^2 + 8x - 2}{x - 5}$$

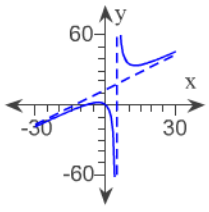
A.



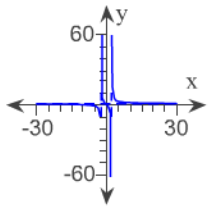
B.



C.



D.



Student: _____	**Instructor:** Garth Isaak	**Assignment:** Polynomial etc functions
Date: _____	**Course:** precalc blitzer (1)	practice diagnostic 4a
Time: _____	**Book:** Blitzer: Precalculus Essentials, 3e	

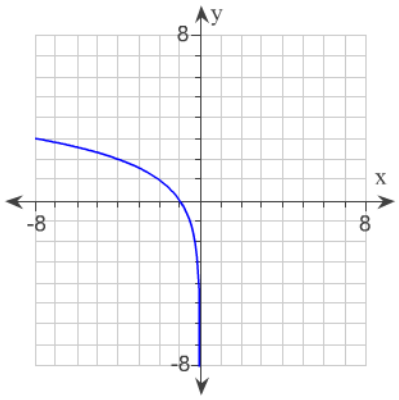
4. The average cost per unit, y, of producing x units of a product is modeled by

$$y = \frac{650{,}000 + 0.25x}{x}$$

Describe the company's production level so that the average cost of producing each unit does not exceed $6.75.

- ○ A. Not more than 100,000 units
- ○ B. At least 200,000 units
- ○ C. At least 100,000 units
- ○ D. Not more than 200,000 units

5. The graph of a logarithmic function is given. Select the function for the graph from the options.



- ○ A. $f(x) = 1 - \log_2 x$
- ○ B. $f(x) = \log_2 x$
- ○ C. $f(x) = -\log_2 x$
- ○ D. $f(x) = \log_2(-x)$

Student: _____	**Instructor:** Garth Isaak	**Assignment:** Polynomial etc functions
Date: _____	**Course:** precalc blitzer (1)	practice diagnostic 4a
Time: _____	**Book:** Blitzer: Precalculus Essentials, 3e	

6. Use properties of logarithms to condense the logarithmic expression. Write the expression as a single logarithm whose coefficient is 1. Where possible, evaluate logarithmic expressions.

$$\frac{1}{5}(\log_2 x + \log_2 y) - 2\log_2(x+2)$$

A. $\log_2 \frac{\sqrt[5]{xy}}{2(x+2)}$

B. $\log_2 \frac{\sqrt[5]{xy}}{(x+2)^2}$

C. $\log_2 \frac{\sqrt[5]{x+y}}{(x+2)^2}$

D. $\log_2 \frac{\sqrt[5]{x}+\sqrt[5]{y}}{(x+2)^2}$

7. Solve the logarithmic equation. Be sure to reject any value that is not in the domain of the original logarithmic expressions. Give the exact answer.

$$\log_3(x+5) = 2 + \log_3(x+2)$$

A. $\{(-3/8)\}$

B. $\{(-13/8)\}$

C. $\{(13/8)\}$

D. $\{(3/8)\}$

Student: _____	**Instructor:** Garth Isaak	**Assignment:** Polynomial etc functions practice diagnostic 4a
Date: _____	**Course:** precalc blitzer (1)	
Time: _____	**Book:** Blitzer: Precalculus Essentials, 3e	

1. B

2. D

3. C

4. C

5. D

6. B

7. B