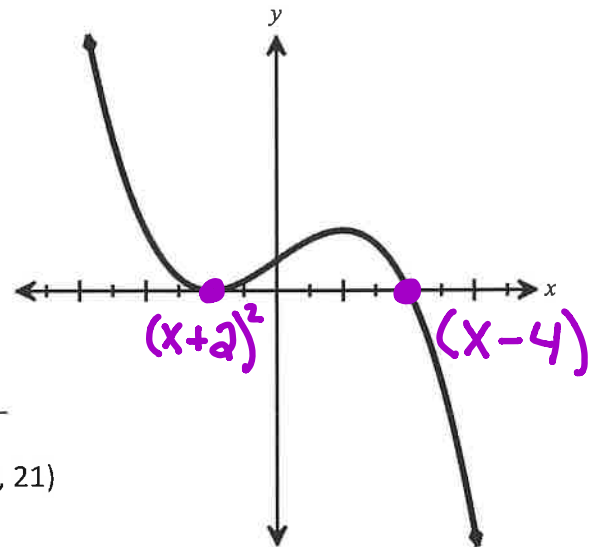


# Homework 2-5

## Creating Polynomial Equations Given a Graph

1) Given the following polynomial graph, answer the following:

- The degree of the polynomial is **EVEN** or **ODD**
- The leading coefficient is **POSITIVE** or **NEGATIVE**
- There is an absolute **MAXIMUM**, **MINIMUM**, or **NEITHER**
- Write a possible equation:  $f(x) = -(x+2)^2(x-4)$   
*don't forget the negative*
- Write an equation if the function passes through the point  $(-3, 21)$



$$21 = a(-3+2)^2(-3-4)$$

$$21 = a \cdot (-1)^2(-7)$$

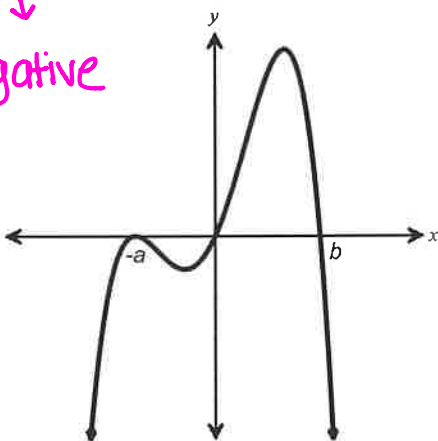
$$21 = a \cdot (-7)$$

$$-3 = a$$

$$f(x) = -3(x+2)^2(x-4)$$

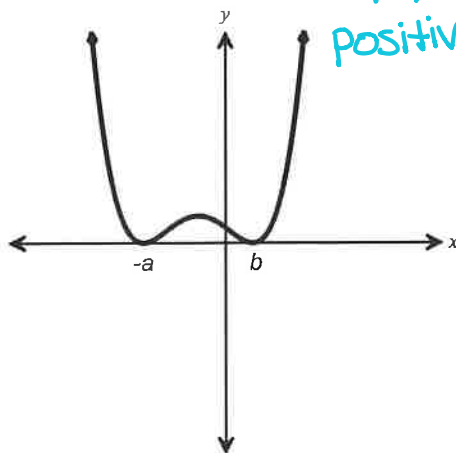
2) Write a possible equation given the following graphs:

↓↓  
negative



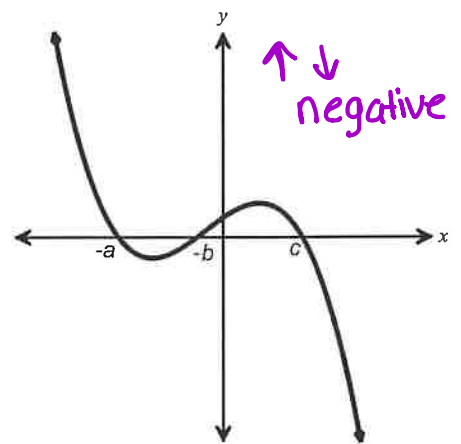
$$f(x) = -x(x+a)^2(x-b)$$

↑↑  
positive



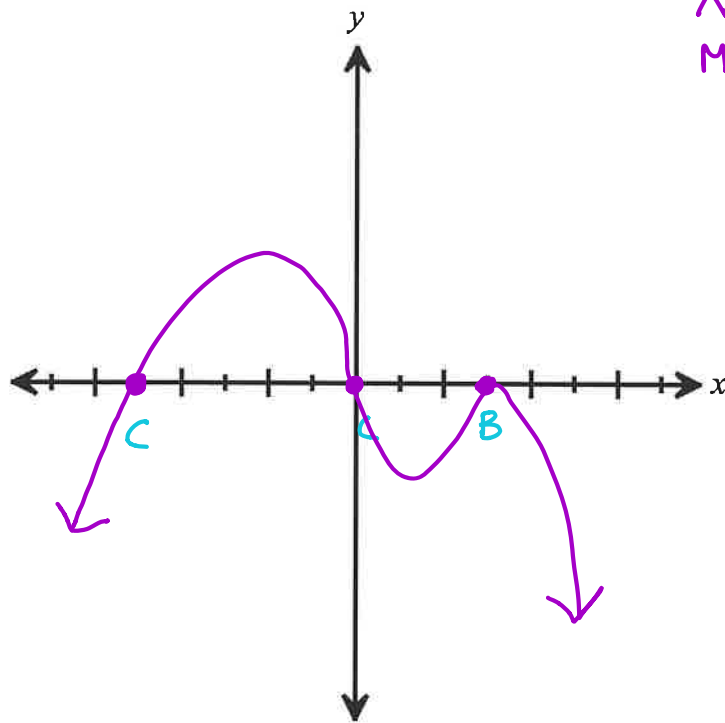
$$f(x) = (x+a)^2(x-b)^2$$

↑↓  
negative



$$f(x) = -(x-a)(x+b)(x-c)$$

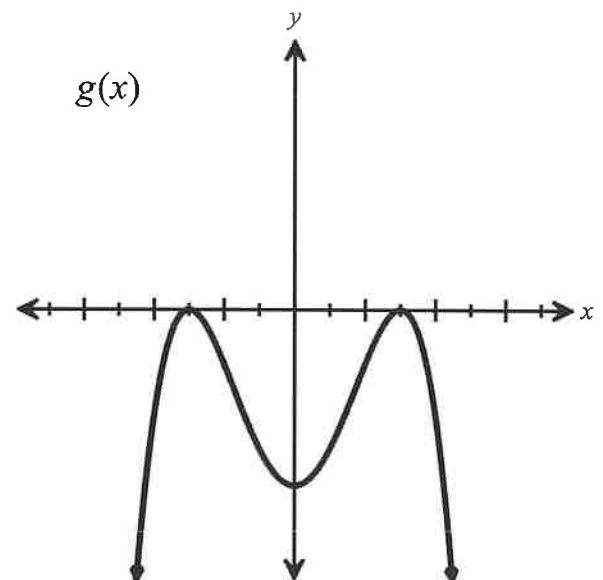
3) Sketch the function  $f(x) = -x(x+5)(x-3)^2$



$X=0$     $X=-5$     $X=3$   
 $M=1$     $M=1$     $M=2$   
 $C$     $C$     $B$   
 Degree: 4  
 negative    $\downarrow \downarrow$

4) Given the graph of  $g(x)$  shown below, state whether the following statements are **true** or **false**.

- a) The leading coefficient is positive False
- b) As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$  True
- c) As  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$  False
- d)  $g(x)$  has x-intercepts True
- e) There is an absolute minimum False
- f) There is a relative maximum True
- g) The degree of the polynomial is odd False
- h) There are two intervals where  $g(x)$  is decreasing True



☐ I got

☐ I almost got it...

☐ I need more practice...

☐ I don't get it... Help!