

$$f(x) = -2(x-8)^2(2x+1)$$

① x-int

$$2x+1=0$$

$$x = -\frac{1}{2} \quad (-\frac{1}{2}, 0)$$

m.1

$$x-8=0$$

$$x=8$$

(8, 0)
m.2

② y-int

$$x=0$$

$$f(x) = -2(-8)^2(1)$$

$$= -2 \cdot 64$$

$$= -128$$

$$(0, -128)$$

$$f(x) = -2(x-8)^2(2x+1)$$

③ End Behavior

Find 1st term
(sign, exponent)

$$-2x^2 \cdot 2x = -4x^3$$

neg → → odd

↑

As $x \rightarrow -\infty$ (left), $f(x) \rightarrow \infty$ (up)

As $x \rightarrow \infty$ (right), $f(x) \rightarrow -\infty$ (down)

① Quiz Review

~ (packet → answers on website)

~ pink packet

* work in any order you wish

* ask questions

④ $f(x) > 0$ OR
 $f(x) < 0$ neg.

$$f(x) = -2(x-8)^2(2x+1)$$

a. $x < -0.5$

Take a # less than -0.5
 $x = -1$
 plug in to see if pos/neg
 $-2(-9)^2(-1)$
 $-2(\text{pos})(-1)$
 $f(x) < 0$

b. $-0.5 < x < 8$

1 is btw -0.5 & 8
 $x = 1$
 $-2(-7)^2(3)$
 $-2 \cdot \text{pos}$
 neg
 $f(x) < 0$

c. $x > 8$

$x = 10$
 $-2(2)^2(21)$
 $-2 \cdot \text{pos}$
 neg
 $f(x) < 0$

① Quiz Review

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* work in any order you wish

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$$f(x) = -2(x-8)^2(2x+1)$$

① x-int

$$x-8=0$$

$$x=8 \text{ (M.2)}$$

$$2x+1=0$$

$$x=-\frac{1}{2} \text{ (M.1)}$$

② y-int

$$x=0$$

$$f(x) = -2(-8)^2(1)$$

$$= -2 \cdot 64$$

$$(0, -128)$$

$$f(x) = -2(x-8)^2(2x+1)$$

③ End Behavior

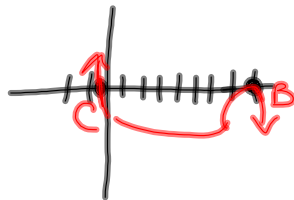
* 1st terms;
multiply them
don't forget
exponents

$$-2x^2 \cdot 2x$$

↑ neg. odd

As $x \rightarrow -\infty$,
 $f(x) \rightarrow \infty$

↓ As $x \rightarrow \infty$,
 $f(x) \rightarrow -\infty$



④ $f(x) > 0$
pos

$f(x) < 0$
neg.

a. $x < -0.5$

Test $x = -1$

$$-2(-1-8)^2(-1) = -2(81)(-1)$$

pos $f(x) > 0$

b. $-0.5 < x < 8$

Test $x = 0$

$$-128$$

$f(x) < 0$

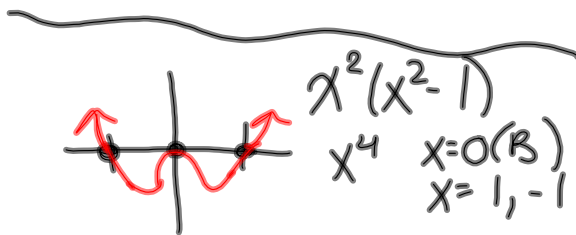
c. $x > 8$

Test $x = 10$

$$-2(2)^2(2)$$

neg.

$f(x) < 0$



① Quiz Review

~ (packet → answers on website)

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* work in any order
you wish

* ask questions