MAT 171 Section 3.2 Homework **Name:** _____

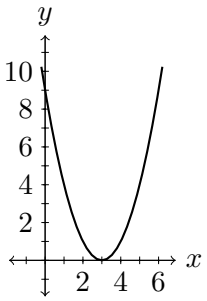
Use the Leading Coefficient Test to determine the end behavior of the graph of the given polynomial function. Then use this end behavior to match the polynomial function with its graph labeled (a) through (d) below.

1. $f(x) = -x^4 + x^2$ Left:_____ Right:_____ Graph:_____

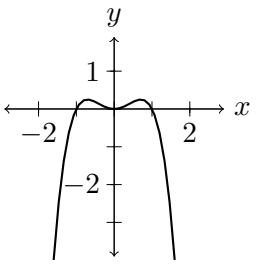
2. $f(x) = x^3 - 4x^2$ Left:_____ Right:_____ Graph:_____

3. $f(x) = (x-3)^2$ Left:_____ Right:_____ Graph:_____

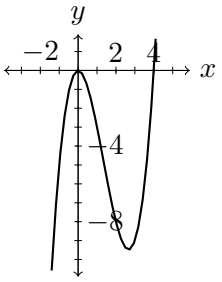
4. $f(x) = -x^3 - x^2 + 5x - 3$ Left:_____ Right:_____ Graph:_____



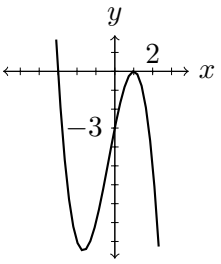
(a)



(b)



(c)



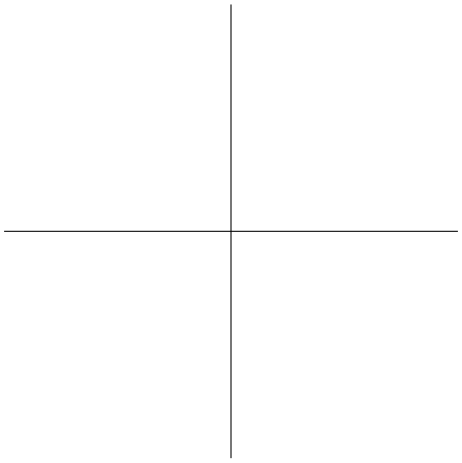
(d)

Find the zeros for each polynomial function and give the multiplicity for each zero. State whether the graph crosses the x-axis, or touches the x-axis and turns around (bounces) at each zero. Then draw a rough sketch.

5. $f(x) = 4(x-3)(x+6)^3$

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

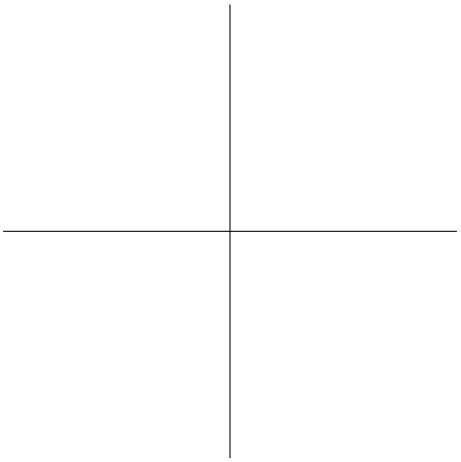


6. $f(x) = x^3 - 2x^2 + x$

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

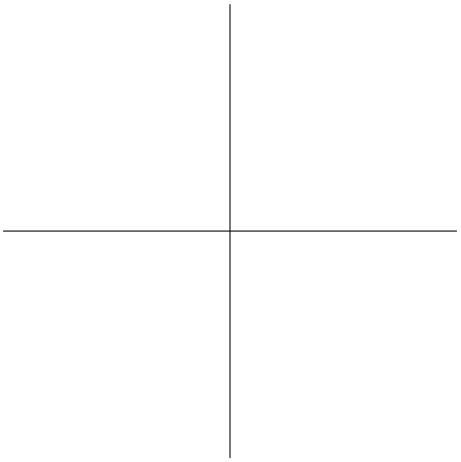


7. $f(x) = x^3 + 7x^2 - 4x - 28$

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____

x-intercept: _____ Multiplicity: _____ Cross/Bounce: _____



For problems 8-12 do the following.

(a) **Use the Leading Coefficient Test to determine the graph's end behavior.**

(b) **Find the y-intercept.**

(c) **Find the x-intercepts. State whether the graph crosses or bounces at each x-intercept.**

(d) **Make a rough sketch.**

8. $f(x) = x^3 + 2x^2 - x - 2$

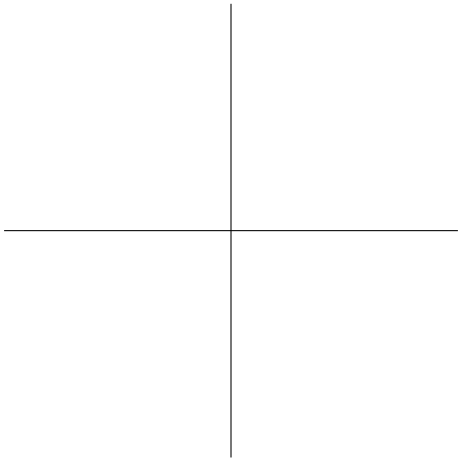
Left behavior:_____ Right behavior:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

y-intercept:_____



9. $f(x) = -x^4 + 16x^2$

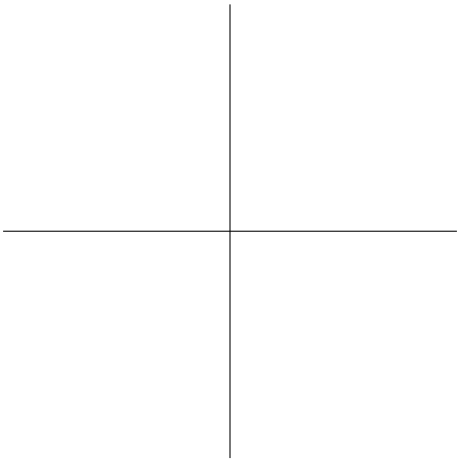
Left behavior:_____ Right behavior:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

y-intercept:_____



10. $f(x) = 3x^2 - x^3$

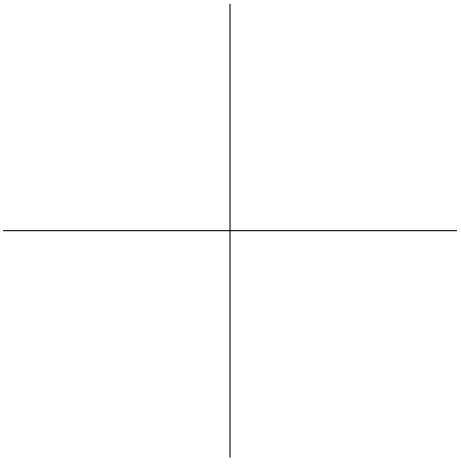
Left behavior:_____ Right behavior:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

y-intercept:_____



11. $f(x) = x^2(x-1)^3(x+2)$

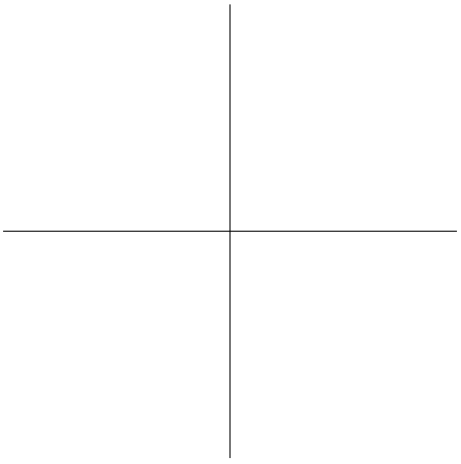
Left behavior:_____ Right behavior:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

y-intercept:_____



12. $f(x) = -2x^3(x-1)^2(x+5)$

Left behavior:_____ Right behavior:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

x-intercept:_____ Cross/Bounce:_____

y-intercept:_____