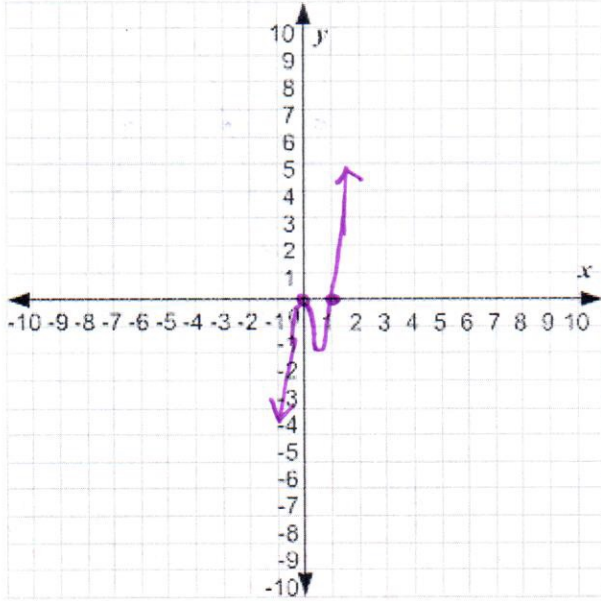


Name: _____

Secondary 3 Honors
2-5 Notes: Graphing Polynomials

Sketch the graph of each function:

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



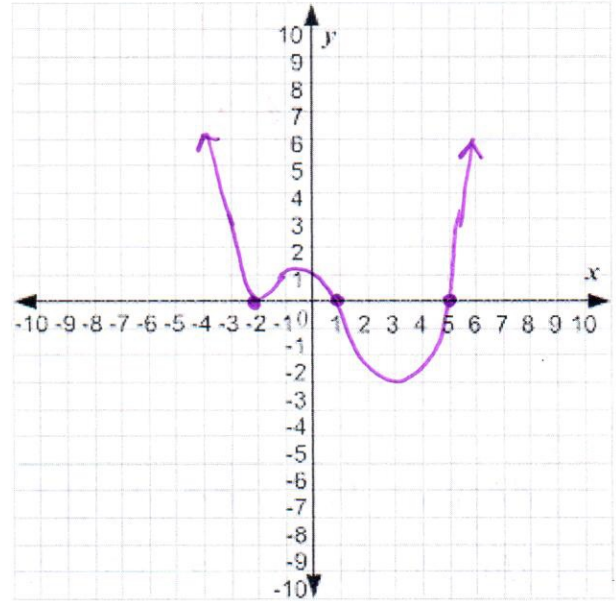
$$f(x) = x^3 - x^2 \\ = x^2(x-1)$$

degree: 3 odd, + ↗

zeros: $x=0$, $x=1$

0 mult. 2, 1 mult. 1
bounce cross

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



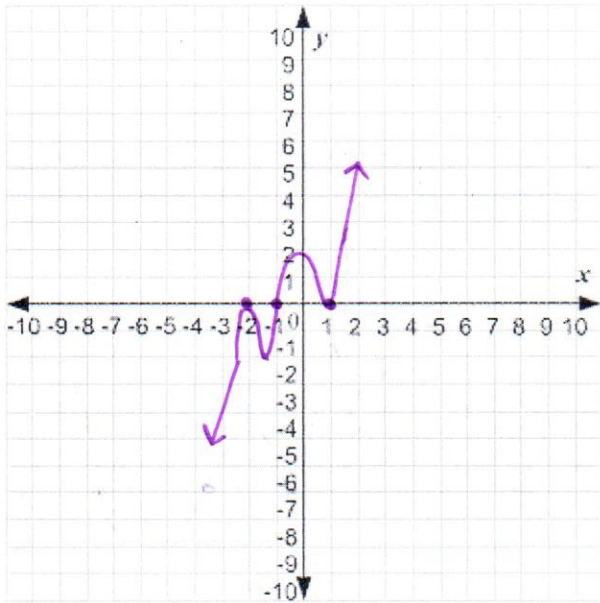
$$f(x) = (x-5)^3(x+2)^2(x-1)$$

degree: 6 even, + ↕

zeros: $x=5$, $x=-2$, $x=1$

5 mult. 3, -2 mult. 2, 1 mult. 1
cross bounce cross

$$f(x) = (x+1)^3(x+2)^2(x-1)^4$$

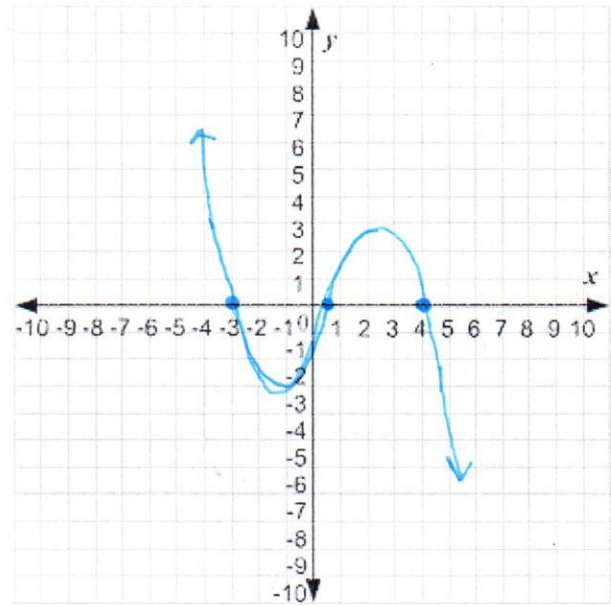


degree: 9 odd, + ↗

zeros: $x = -1, x = -2, x = 1$

-1 mult. 3, -2 mult. 2, 1 mult. 4
cross bounce bounce

$$f(x) = -2x^3 + 3x^2 + 23x - 12$$



$$\underline{-2x^3 + 3x^2 + 23x - 12}$$

$$\cancel{x^2(-2x+3)}$$

$$\underline{\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12}$$

$$\pm 1, \pm 2$$

$$= \boxed{\pm 1, \pm \frac{1}{2}, \pm 2, \pm 3, \pm \frac{3}{2}, \pm 4, \pm 6, \pm 12}$$

$$\begin{array}{r} 4 \overline{) -2 \ 3 \ 23 \ -12} \\ + \downarrow -8 \ -20 \ 12 \ \checkmark \\ \hline -2 \ -5 \ 3 \ \underline{0} \end{array}$$

$$\underline{-2x^2 - 5x + 3}$$

$$x^2 - 5x - 6$$

$$(x-6)(x+1)$$

$$(-2x-6)(-2x+1)$$

$$\boxed{(x-4)(x+3)(-2x+1)}$$

degree: 3 odd, - ↘ ↗

zeros: $x = 4, x = -3, x = 1/2$

4 mult. 1, -3 mult. 1, $1/2$ mult. 1
cross cross cross

$$\begin{array}{r} -2x+1=0 \\ -1 \ -1 \\ \hline -2x = -1 \\ \underline{-2} \ \underline{-2} \\ x = 1/2 \end{array}$$