HPC
2.2-2.3
WS #2 – NO Calc – ANSWER KEY

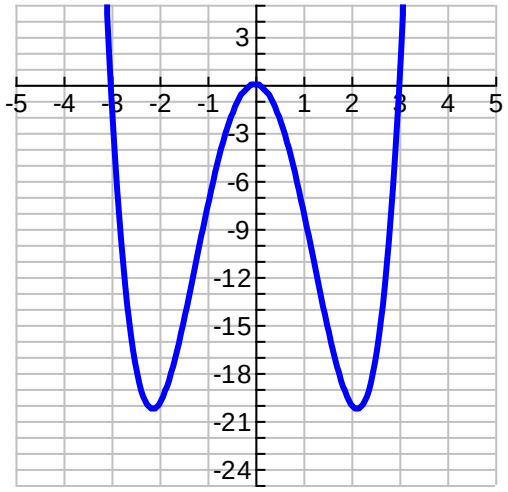
Name_____

Graph without a calculator. State the x and y intercepts. Label & Scale axes.

1) $f(x) = x^4 - 9x^2$

x-intercept(s): 0, -3, 3

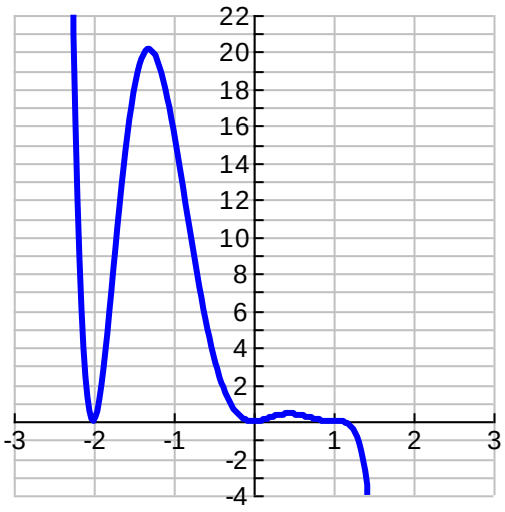
y-intercept: 0



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

x-intercept(s): 0, 1, -2

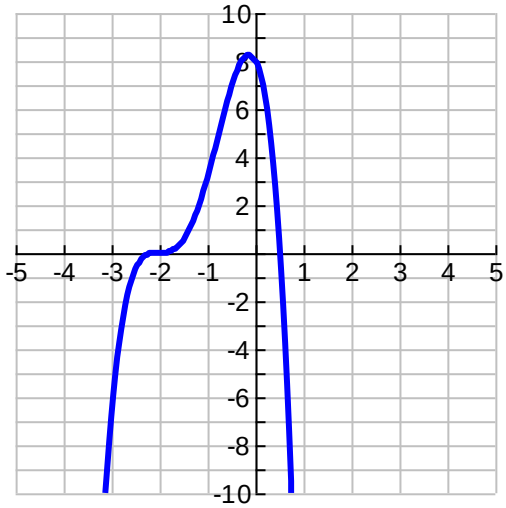
y-intercept: 0



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

x-intercept(s): $\frac{1}{2}, -2$

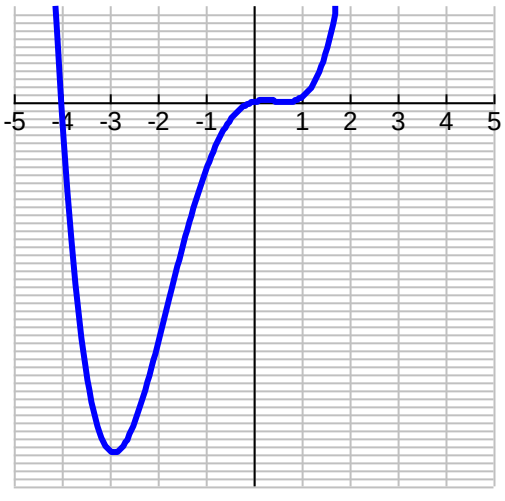
y-intercept: 8



4) $f(x) = -\frac{1}{2}(3x-2)^2(4+x)(-x)$

$\frac{2}{3}, -4, 0$

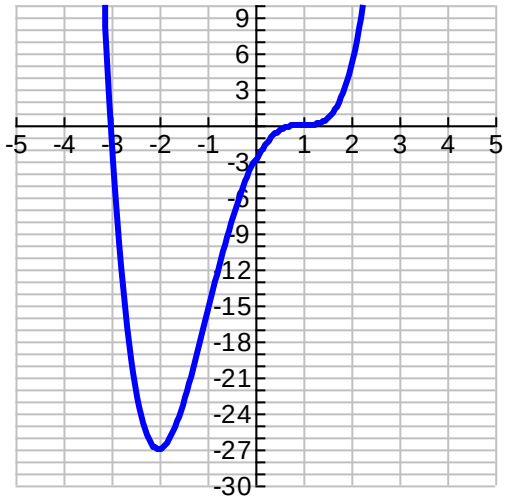
0



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

x-intercept(s): 1, -3

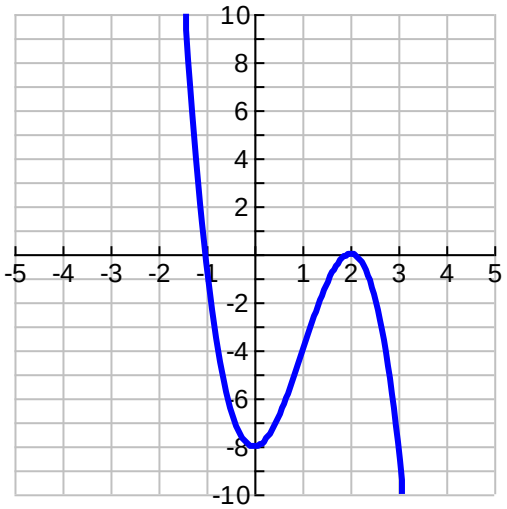
y-intercept: -3



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

x-intercept(s): 2, -1

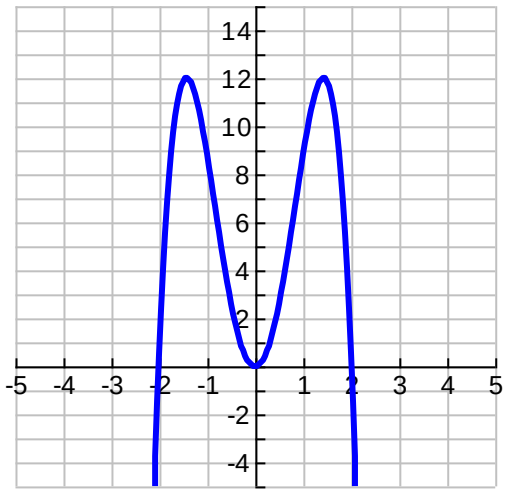
y-intercept: -8



7) $f(x)=-3x^4+12x^2$

x-intercept(s): 0, 2, -2

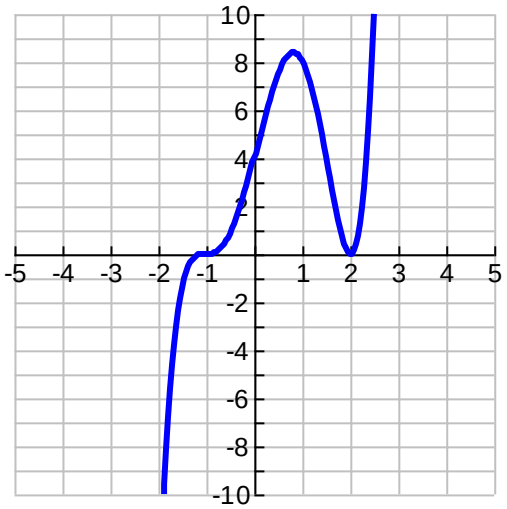
y-intercept: 0



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

x-intercept(s): -1, 2

y-intercept: 4



Position: $h = -16t^2 + v_0 t + h_0$

$t = time(\text{seconds})$

$v_0 = initial\ velocity$

$h_0 = initial\ height$

Initial velocity is POSITIVE
when object propelled upward…

Initial velocity is NEGATIVE
when object propelled downward…

Initial velocity = 0
when object is dropped

1) If a rock is dropped off a bridge that is 30 feet above a river, how long will it take the rock to hit the river?

1.369 seconds

2) A hawk flying at a height of 50 *feet* spots a rat on the ground. If he dives down to catch the rat at a speed of 45 *feet per second*, how long will it take for him to catch the rat?

0.853 seconds

3) On September 8, 1998 Mark McGwire of the St. Louis Cardinals broke the home run record with his 62nd home run of the year. He went on to hit 70 homeruns for the season. Besides hitting home runs, McGwire also occasionally popped out. Suppose the ball was 3.5 *feet* above the ground when he it straight up with an initial velocity of 80 *feet per second*. How long did the catcher have to get into position to catch the ball after it was hit?

5.043 seconds

4) A rectangular garden is surrounded by a walk of uniform width. The area of the garden in 180 square yard. If the dimensions of the garden plus the walk are 16 yards by 24 yards, find the dimensions of the garden.

10 *yd* x 18 *yd*

5) The path of a diver is given by : $y = -\frac{4}{9}x^2 + \frac{24}{9}x + 12$

Where *y* is the height (in *feet*) and *x* is the horizontal distance (in *feet)* from the end of the diving board. What is the maximum height of the diver? When does the diver hit the water?

Max height : 16 *feet*
Hits the water: 9 *seconds*
(wow that's a long dive!)