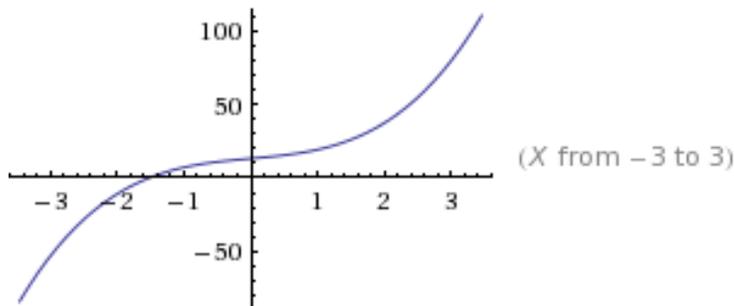


Math Pretest – Answer key

1. Use the Power Function Rule. Given $F(x) = aX^n + bX^m$, $F'(x) = (a*n)X^{(n-1)} + (b*m)X^{(m-1)}$
 - a. $F'(x) = 6x^2 + 4$
 - b. $F(x)$ is a curvilinear function and the slope of a curvilinear function is not constant. In geometry, the slope of a curvilinear function at a given point is measured by the slope of a line drawn tangent to the function at that point. The derivative of a function $F'(x)$ is itself a function and it measures the slope (rate of change) of the original function at a given point.
 - c. $F'(3) = 58$; The slope of the function $F(x)$ evaluated at $x = 3$ is 58. As you can see, via the plot of $F(x)$ below, at $x = 3$, the slope of this curve is positive and very steep.



For help with Question 1, see the following videos, 35 minutes in length combined:

<http://www.khanacademy.org/video/calculus--derivatives-1--new-hd-version?playlist=Calculus>

<http://www.khanacademy.org/video/calculus--derivatives-2--new-hd-version?playlist=Calculus>

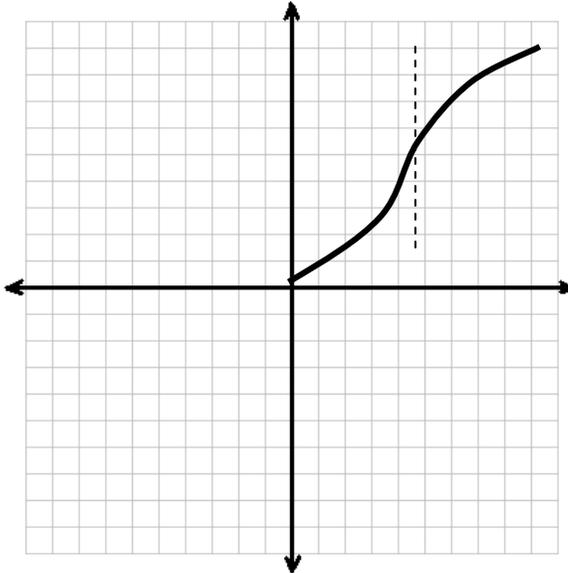
<http://www.khanacademy.org/video/calculus--derivatives-2-5--new-hd-version?playlist=Calculus>

For additional practice problems:

http://www.khanacademy.org/exercise/derivatives_1

2. Plot

a. A



The line starts at (0,0), the origin, and the slope of the function is always positive. The function increases rapidly at first, then continues to increase at a slower rate.

3. Using any method you choose (substitution, elimination, graphing) you should arrive at $X = -1$, $Y = 4$.

a. Khan videos

i. There are 3 substitution method videos, the first can be found at this link

1. <http://www.khanacademy.org/video/solving-systems-by-substitution-1?playlist=Algebra%20%20Worked%20Examples>

ii. There are 3 elimination method videos, the first of which can be found at this link

1. <http://www.khanacademy.org/video/solving-systems-by-elimination?playlist=Algebra%20%20Worked%20Examples>

iii. Solving systems of equations by graphing is not the most time effective method, for this class you should use one of the other two methods.

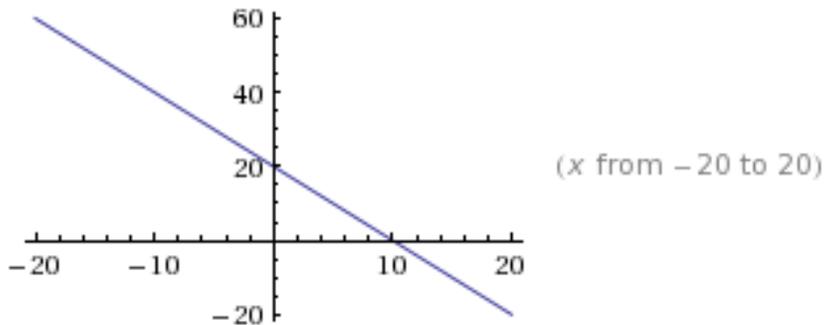
iv. Practice problems

1. http://www.khanacademy.org/exercise/systems_of_equations_with_substitution

2. http://www.khanacademy.org/exercise/systems_of_equations_with_elimination_0.5

4. If $Z = Y$, we can set the two equations equal to each other; $2R + 7 = 40 - R$. From here we have one equation with one unknown, solve for R . You should get that $R = 11$.

5. Since the question asked you to put M on the vertical axis (y-axis) and N on the horizontal axis (x-axis), this equation is not in $Y = mX + b$ format. What we need to do is re-arrange the equation for M in terms of N. Solving the equation for M should leave you with $M = 20 - 2N$ (remember N has a 1 in front of it). Now we can graph:



- a.
- b. Once we've re-arranged the equation, it should be clear that the slope is -2. Even if it's not clear, you can still arrive at slope = -2 by picking any two points and calculating the "rise over run."
- c. We will be working extensively with equations and their graphs throughout this course, if your graphing skills are rusty, no sweat, Khan Academy has you covered:
1. <http://www.khanacademy.org/video/slope-of-a-line?playlist=Algebra%20I%20Worked%20Examples>
 2. <http://www.khanacademy.org/video/graphing-a-line-in-slope-intercept-form?playlist=Algebra%20I%20Worked%20Examples>
- d. Practice graphing
1. http://www.khanacademy.org/exercise/graphing_linear_equations