

CALC W/APPS SUMMER REVIEW PACKET DUE THE FIRST DAY OF SCHOOL

The problems in the packet are designed to help you review topics from Algebra 1, Algebra 2 and Precalculus that are important to your success in Calculus with Applications.

Please attempt the problems on your own without any notes and **SHOW ALL WORK!** In addition, do not use your calculator for these problems. When you come across topics that require a little review, feel free to look at your old notes, search a website or ask a friend for help. If you want to check your work with a calculator, that is fine also.

Bring the finished packet with you to your Calculus with Applications class on the first day of school. You will be assessed on these skills during the first week of school as part of your 1st quarter grade.



Enjoy your summer! ☺ We are looking forward to seeing you in August. If you have any questions, please contact the math Resource Teacher: Laura_D_Goetz@mcpsmd.org

Name: _____

1) Expand (FOIL!):

a) $(x + 3)(x + 1) =$

b) $(x - 5)(x + 4) =$

c) $(x - 6)^2 =$

d) $(2x - 1)(4x + 3) =$

2) Factor:

a) $x^2 - 4x - 12 =$

b) $x^2 - 6x + 8 =$

c) $x^2 + 12x + 35 =$

d) $x^2 - 36 =$

e) $2x^2 - 5x - 3 =$

f) $3x^2 + 13x - 10 =$

g) $x^2 + 4x - 10 =$

(hint: use quadratic formula!)

3) Factor (by collecting commons terms):

a) $4x^4y + 12x^2y^2 =$

b) $6x^3y^3 - 2xy =$

c) $14a^2b^5 - 7a^4b^2 =$

4) Rewrite each with a single exponent:

a) $\sqrt{x} =$

b) $\sqrt[3]{x} =$

c) $\frac{1}{x^4} =$

d) $\frac{6}{x^3} =$

e) $\frac{1}{\sqrt{x}} =$

f) $\sqrt[3]{x^5} =$

g) $\frac{x^6}{x^2} =$

h) $\frac{x^3}{x^7} =$

i) $\frac{x}{\sqrt{x}} =$

j) $\frac{4\sqrt{x}}{2x} =$

5) Simplify each expression.

a) $\left(\frac{2}{7}\right)\left(\frac{21}{10}\right) =$

b) $\frac{\frac{8}{3}}{\frac{2}{9}} =$

c) $\frac{\frac{4}{9}}{\frac{2}{2}} =$

d) $\frac{\frac{1}{2} - \frac{5}{4}}{\frac{3}{8}} =$

e) $(2^2)(2^3) =$

f) $3^{-2} =$

g) $(2^3)^2 =$

6) Simplify each expression

a) $\frac{5}{x^5} =$

b) $\frac{\frac{2}{x^2}}{\frac{10}{x^5}} =$

c) $(3x)^2 =$

d) $\frac{4x^{-2}y^3}{8xy} =$

e) $(5a^3)(4a^2) =$

f) $(4x^2)^3 =$

7) Solve for x (remember – no calculator!):

a) $6x - 10 = 14 - x$

b) $3x^2 = 27$

c) $\frac{2}{5}x = 8$

d) $\frac{x}{10} = \frac{3}{8}$

e) $5\sqrt{x} = 50$

f) $\sqrt{2x} = 6$

g) $x^3 = 8$

h) $2x^3 = 54$

i) $2\sqrt{x} + 9 = 21$

j) $-2x^2 - 7 = 41 - 5x^2$

8) Solve for z:

a) $4x + 10yz - 3 = 0$

b) $y^2 + 3yz - 8z - 4x = 0$

9) Solve for x (still no calculator!):

a) $x^2 - 8x + 15 = 0$

b) $x^2 = -9x - 14$

c) $2x^2 + 7x - 18 = x^2 + 4x$

d) Determine all points of intersection (using algebra) between the parabola $y = x^2 + 3x - 4$ and the line $y = 5x + 11$

10) Given $f(x) = \frac{x}{x+3}$, $g(x) = \sqrt{x-3}$, $h(x) = x^2 + 5$, find (hint: “compositions”)

a) $h(g(x))$

b) $f(f(3))$

11) Find the slope between the points $(-2,4)$ and $(6,-1)$.

12) Using either the slope-intercept (hint: $y = mx + b$) or point-slope

(hint: $y - y_1 = m(x - x_1)$) form of a line to write the equation for the lines described:

a) with slope -2 and containing the point $(3,4)$

b) containing the points $(1,-3)$ and $(-5,2)$

c) with slope 0 and containing the point $(4,2)$

d) parallel to line $2x - 3y = 7$ and containing the point $(5,1)$

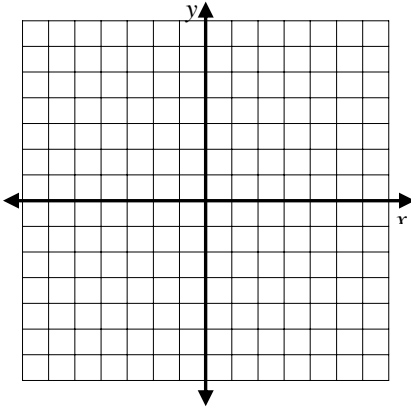
e) perpendicular to the line $-3y + 6x = 2$ and containing the point $(4,3)$

13) For each function, make a neat sketch, including a scale or numbering of the axes.
Name the domain and range for each as well. (Remember – no calculator!)

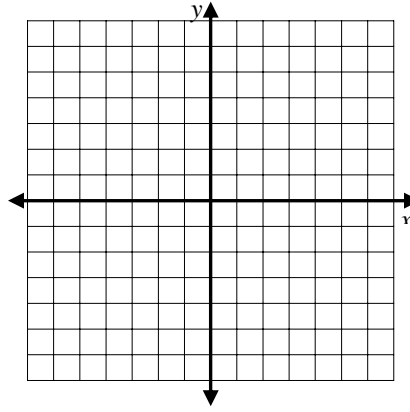
a) $y = \sqrt{x}$

b) $y = \sqrt[3]{x}$

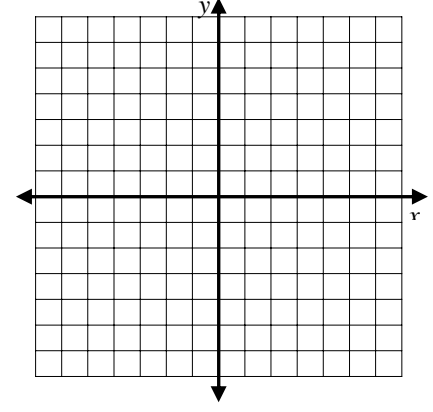
c) $y = e^x$



D:
R:



D:
R:

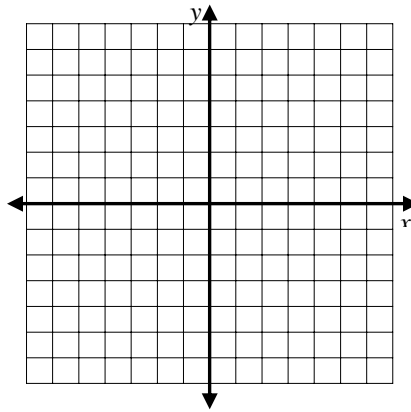


D:
R:

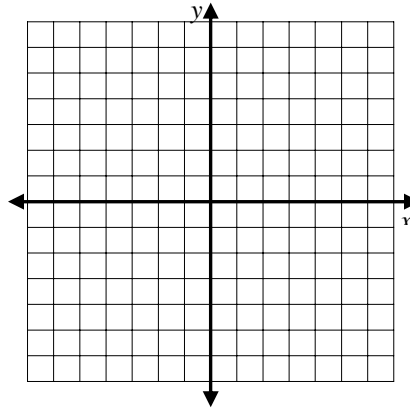
d) $y = \ln x$

e) $y = 2^x$

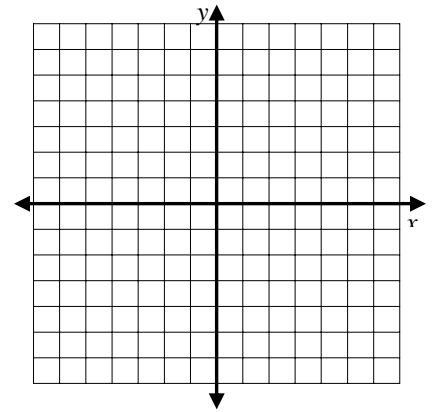
f) $y = 1/x$



D:
R:



D:
R:

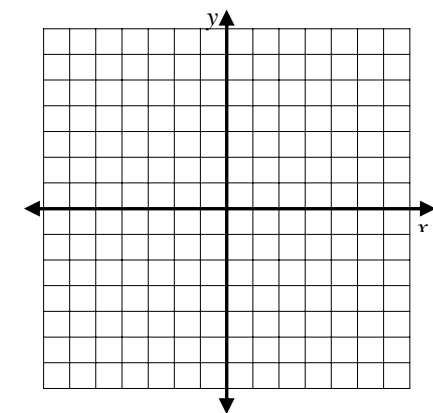
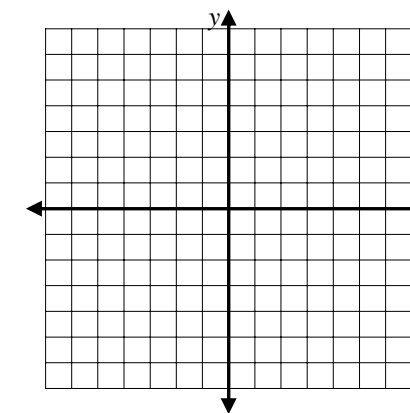
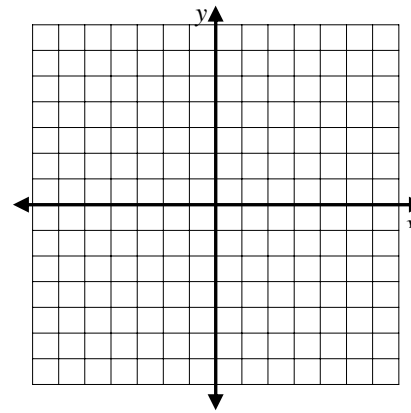


D:
R:

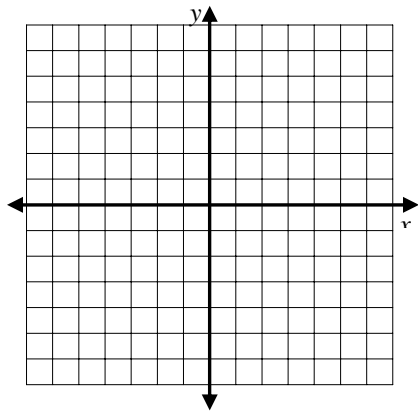
g) $y = x^2 - 4$

h) $y = x^2 + 4x + 3$

i) $y = \sin x$

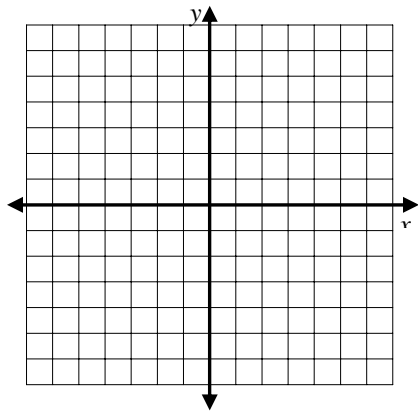


j) $y = \sqrt{x-2}$



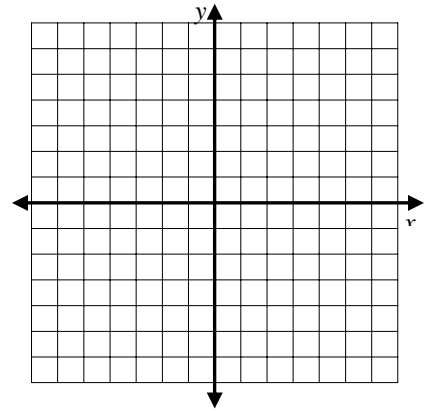
D:
R:

k) $y = \sqrt{4-x^2}$



D:
R:

l) $y = |x+3| - 2$



D:
R: