

WATKINS MILL HS
SUMMER REVIEW PACKET
CALCULUS w/APPLICATIONS
DUE 3rd DAY OF CLASS
IN AUGUST

Write neatly and show all work! Do as much as you can without a calculator!

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

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 :

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:

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 $(4,3)$

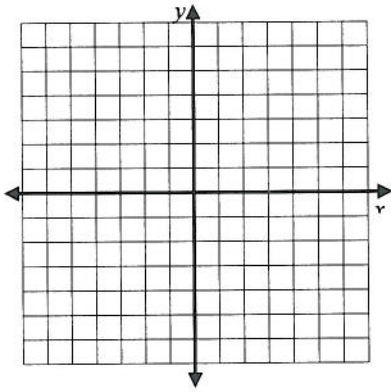
13) For each function, make a neat sketch, including a scale or numbering of the axes.

Name the domain and range for each as well. (Remember – no calculator!)

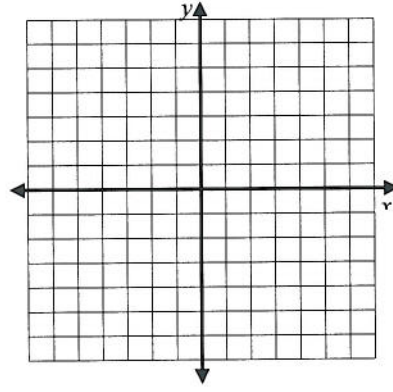
a) $y = \sqrt{x}$

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

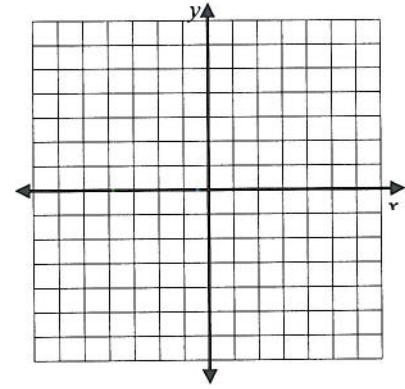
c) $y = e^x$



D:
R:



D:
R:

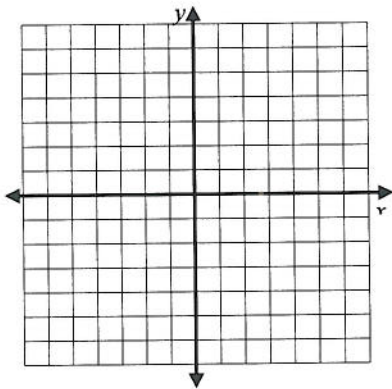


D:
R:

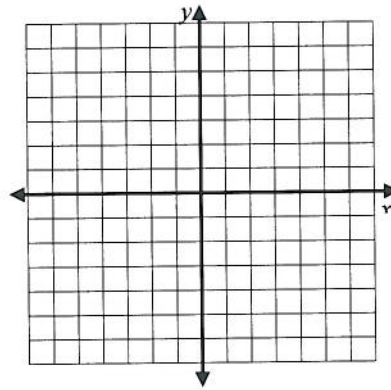
d) $y = \ln x$

e) $y = 2^x$

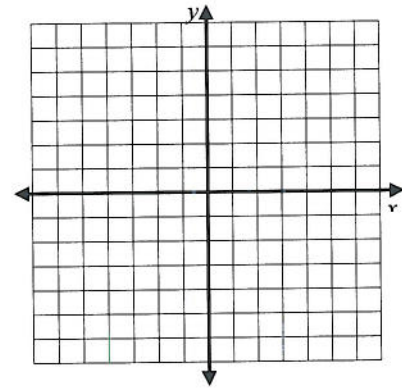
f) $y = 1/x$



D:
R:



D:
R:

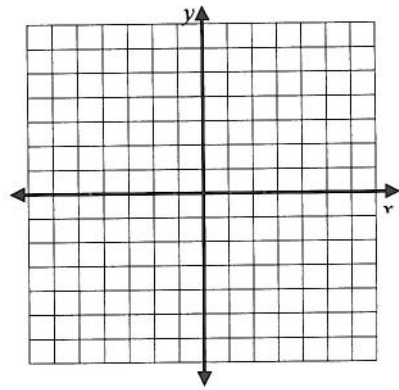
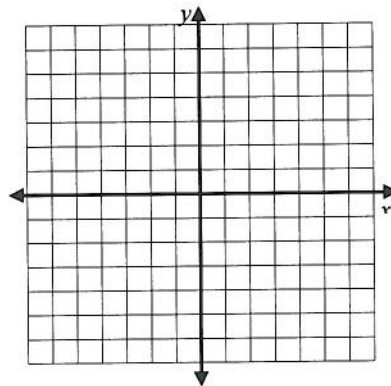
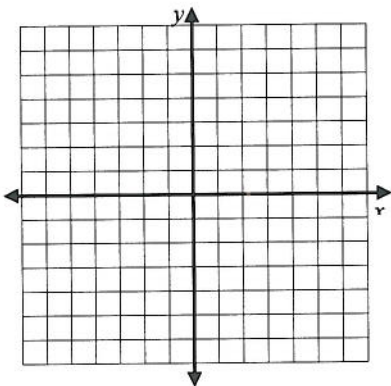


D:
R:

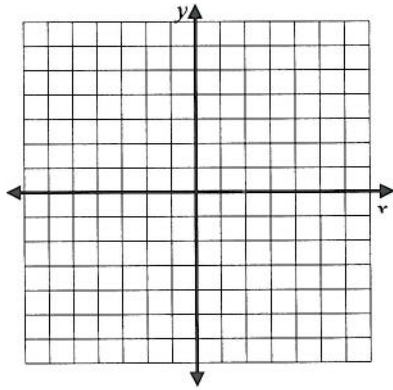
g) $y = x^2 - 4$

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

i) $y = \sin x$

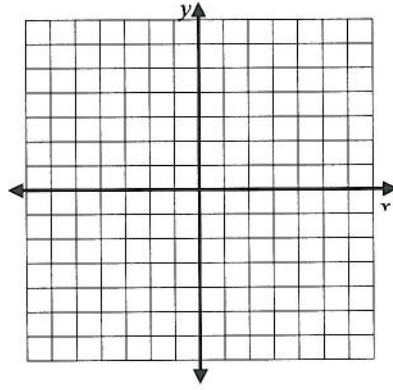


j) $y = \sqrt{x-2}$



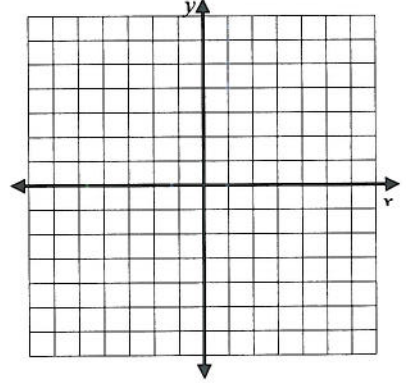
D:
R:

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



D:
R:

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



D:
R: