

Prerequisite Skills for PreCalculus Centennial High School

Materials Required:

LARGE loose-leaf notebook

TI-84, TI-89 TI-Nspire calculator

(please note that the TI-89 is probably appropriate only if you plan to take AP Calculus)

These problems are considered to be review problems. If you are struggling with these problems then you are encouraged to spend more time than the average student on your daily homework in Pre-Calculus.

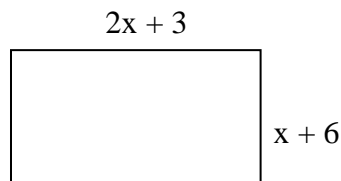
PROBLEMS:

Please complete each problem on a separate sheet. Make sure to copy down the problems. Show work!!!

1. Solve the literal equation for b_1 : $A = \frac{1}{2}h(b_1 + b_2)$

2. Solve the system:
$$\begin{cases} -x + 2y = 5 \\ 2x - y = -4 \end{cases}$$

3. Find the dimensions of the following rectangle if the rectangle's area = 180 ft^2 .



4. Perform the indicated operations and simplify: $4i(1 - 3i)(3 + 6i)$

5. Find the domain and range of the following function (write in interval notation): $f(x) = \sqrt{3x + 6}$

6. State the domain of the function (write in interval notation): $f(x) = \frac{4x - 2}{x + 5}$

7. Given $f(x) = 2x + 4$ and $g(x) = 3x^2 - 1$
- Find the value of $g(-3)$ and state what this means mathematically.
 - What type of function is $f(x)$ and what type of function is $g(x)$?
 - Find $h(x) = g(f(x))$ **and** state the domain of $h(x)$.
 - Find $f^{-1}(x)$.
 - Find a line that is perpendicular to $f(x)$ through $(-6, 2)$.
8. Given $g(x) = (x - 3)^2 - 5$,
- How can $g(x)$ be obtained from the graph $y = x^2$. Name three points on $y = x^2$.
 - Then graph $g(x)$. Label at least 3 points clearly on $g(x)$ using the points from part (a) as reference points.
 - Find the zeros of $g(x)$. Find the exact answers and decimal approximations.
 - State the domain and range of $g(x)$. Write in interval notation.

9. Simplify: $\left(\frac{10xy}{4x^5y^4}\right)\left(\frac{y}{(3x)^{-2}}\right)$

10. Solve the equation for x : $\sqrt{2x - 1} + x = 0$

11. Solve the equation by factoring: $2x^3 - 2x^2 - 12x = 0$

12. Solve the following rational equation: $\frac{3x - 2}{x + 4} = \frac{5x + 2}{2x + 6}$

13. Given the compound function, $f(x) = \begin{cases} 2x - 1, & x > -1 \\ x^2 - 3, & x \leq -1 \end{cases}$, evaluate each of the following.

- $f(2)$
- $f(-1)$
- $f(0)$