Math Placement B-Test Sample Problems

(1) Perform the indicated operations and reduce the answer to lowest terms.

(a) $\left(\dfrac{x^3+x}{x^2+x}\right)\cdot\left(\dfrac{x^2-1}{x^2+1}\right)$

(b) $\dfrac{x}{x+1}+\dfrac{1}{x-1}+1$

(c) $\dfrac{3-\frac{1}{x}}{9-\frac{1}{x^2}}$

(2) Express in simplified form with no negative exponents: $\left(x^5y^{-7}\right)\left(x^{-8}y^9\right)^{-1}$

(3) Write the equation of the line containing the point $(1,2)$ and parallel to the line $2x+4y=1$.

(4) Find the x-intercept, y-intercept, and the slope of the line $2x+y=2$. Sketch the graph of $2x+y=2$.

(5) Solve the system of equations for x and y:

$$\begin{aligned} x-2y &= 3 \\ -3x+2y &= 7 \end{aligned}$$

(6) Factor completely: $6x^2+13x+6$

(7) Solve the following equations for x:

(a) $x^2-3x=x+5$

(b) $x^4-10x^2+9=0$

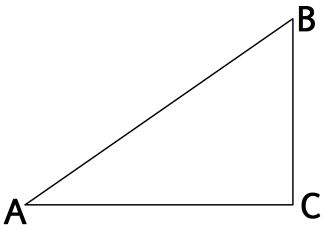
(c) $3-\dfrac{1}{x}=\dfrac{x}{1-x}$

(d) $S=8\pi x+2\pi r^2$

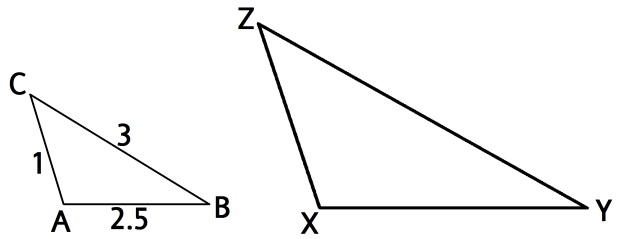
(8) Sketch the graph of the function $y=3-3x^2$. Label all intercepts.

(9) Write and equation to state the following: a varies jointly with b and the square root of c and inversely with the cube of d.

(10) The triangle ABC pictured below is a right, isosceles triangle. If the length of side AC is 3, give the lengths of the other two sides and the measures of angle A and angle B.



(11) The two triangles pictured below are similar. If the perimeter of the second is 19.5, give the lengths of its three sides.



(12) A rectangular poster is three times as high as it is wide. If it contains a picture of 125 square inches framed by a margin of 4 inches at the top and bottom and 3 inches on each side, find the width of the poster.

(13) How many gallows of 40 percent alcohol solution must be mixed with 70 percent solution to obtain 30 gallons of a 52 percent alcohol solution?