

1. A satellite is in the shape of a cylinder with two hemispheres fitted snugly on either end. If the diameter of the cylinder is 5 m and its length is 16 m, find the volume of the satellite. Express the answer in terms of  $\pi$ .

[1] \_\_\_\_\_

2. Convert  $7\angle 225^\circ$  to rectangular coordinates.

[2] \_\_\_\_\_

3. Simplify:  $\frac{\frac{5}{1} - \frac{1}{1}}{\frac{x}{3x} - \frac{3x}{2x}}$

[A]  $\frac{4}{12x^2}$

[B]  $\frac{6}{12x^2}$

[C]  $-\frac{1}{28}$

[D] -28

[3] \_\_\_\_\_

4. How much pure water must be mixed with 7 pints of 80% developer to produce a mixture that is 24% developer?

[4] \_\_\_\_\_

5. Factor:  $16x^{4n+2} + 12x^{7n+4}$

[5] \_\_\_\_\_

6. Simplify by factoring the numerator:  $\frac{x^{12c} - y^{12c}}{x^{6c} + y^{6c}}$

[A]  $x^{2c} + y^{2c}$

[B]  $x^{6c} + y^{6c}$

[C]  $x^{2c} - y^{2c}$

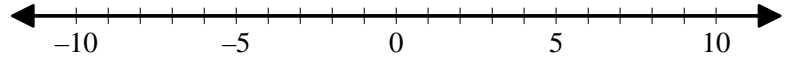
[D]  $x^{6c} - y^{6c}$

[6] \_\_\_\_\_

7. Find the domain of the function  $f(x) = \sqrt{8-x}$ .

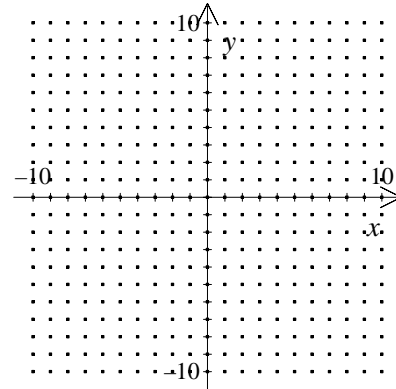
[7] \_\_\_\_\_

8. Graph the following set on the real number line.  $\{x \in \mathbf{R} \mid |x+1| \geq 2\}$



[8] \_\_\_\_\_

9. Graph:  $y = 4^x$



[9] \_\_\_\_\_

10. Draw reference triangles to evaluate  $\frac{2\sqrt{3}}{3} \cos 30^\circ + \frac{4\sqrt{2}}{3} \sin 45^\circ - \frac{5\sqrt{3}}{3} \sin 60^\circ$ . Do not use a calculator.

[10] \_\_\_\_\_