**Precalculus -- Midterm 2019 Review #1** Date _____
Name _____ Period _____

1. Given $f(x)=x^2-2x+1$, find $f(x-3)$.

2. Find the domain of $h(x)=\dfrac{\sqrt{x}}{x-6}$

3. Find the domain of $g(x)=\sqrt{36+2x}$.

4. Sketch the graph of $f(x)=-x^3+2$. Give the domain and range in interval notation.

5. Use the graph of $h(x)=|x|$ to graph the following: (a) $h(x+4)$ (b) $h(-x)+1$

6. Given $f(x)=3x+7$ and $g(x)=2x^2-5$, find the following: (a) $(g-f)(x)$ (b) $(f\cdot g)(x)$

7. Given $r(x)=x^2-2x+16$ and $s(x)=2x+3$, find $r(s(x))$.

8. Given $f(x)=x^3+7$, find $f^{-1}(x)$.

9. Determine the intervals over which the function $f(x)=(x-2)^2+3$ is increasing, decreasing, or constant.

10. Determine whether the following functions are even, odd, or neither:
(a) $g(x)=x^5+4x-7$ (b) $h(x)=3x^4-21x^2$

11. *Verify algebraically*, that $f(x)=3x^5+2$ and $g(x)=\sqrt[5]{\dfrac{x-2}{3}}$ are inverse functions.

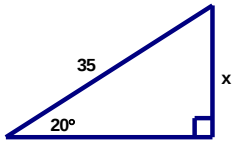
12. True/False: if a function has an inverse then it must pass both the vertical and horizontal line tests.

13. Express $350^\circ$ in radian measure.

14. Find one positive and one negative coterminal angle to $\dfrac{2\pi}{9}$.

15. If $\cos\theta=\dfrac{2}{3}$, $0\le\theta<2\pi$, find all values of $\tan\theta$.

16. Solve for *x* in the given figure.




17. An observer in a lighthouse 250 feet above sea level spots a ship off the shore. If the angle of depression to the ship is $5^\circ$, how far out is the ship?

18. Convert $135^\circ 14' 12''$ to decimal form.