Topic #1 Homework

1. If $f(x) = x^2 - 2x - 1, f(-2) = ?$

   A. 7
   B. -1
   C. 1
   D. -3

   Answer: A

2. The domain of $f(x) = \frac{x-1}{x^2+1}$ is

   A. $x \neq -1$
   B. $x \neq 1$
   C. all real numbers
   D. $x \neq \pm 1$

   Answer: C

3. If $f(x) = \sqrt{x}$ and $g(x) = x^2 + 1$. $f(g(x)) = ?$

   A. $\sqrt{x^2 + 1}$
   B. $x + 1$
   C. $\sqrt{x} + 1$
   D. $\sqrt{x + 1}$

   Answer: A

4. $f(x) = x^3 + 2$, the inverse function is $f^{-1}(x) = ?$

   A. $\frac{1}{x^3+2}$
   B. $\frac{1}{x^3+2}$
   C. $\sqrt[3]{x - 2}$
   D. $-(x^3 + 2)$

   Answer: C

5. Let $f(x) = x^2 + 1$, evaluate $f(x + h) =?$

A. $x^2 + h^2 + 1$
B. $x^2 + h^2$

C. $x^2 + 2xh^2 + 1$
D. $x^2 + 2hx + h^2 + 1$

Answer: D

6. Simplify expression $\frac{x^2-1}{x+1}$.

A. $x + 1$
B. $x - 1$
C. $\frac{1}{x+1}$.
D. $\frac{-1}{x+1}$.

Answer: B

7. Let $f(x) = \sqrt{x + 2}$, then $\lim_{x\to 0} f(x) =?$

A. 2
B. $\sqrt{2}$
C. $\sqrt{-2}$
D. does not exist.

Answer: B

8. $\lim_{x\to -1} \frac{x^2-1}{x+1} =?$

A. ∞
B. does not exist
C. 2
D. -2

Answer: D

9. Let $f(x) = x^2$ find $f(x+h) - f(x)$ and simplify it.

A. h^2
B. $h^2 + 2xh$
C. $h^2 + 2h$
D. $2x^2 + h^2 + 2h$

Answer: B

10. $\lim_{x \to 1} \frac{\sqrt{x}-1}{x-1} = ?$

A. 0
B. ∞
C. 1/2
D. does not exist.

Answer: C