**Math 110** **Homework (2)** **Sections 1.2 & 1.3**

**Choose the correct answer of the following questions:**

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

| (a) $\mathbb{R}$ | (b) $\mathbb{R}-\{1\}$ | (c) $\mathbb{R}-\{-1,1\}$ | (d) $\mathbb{R}-\{0,1\}$ |
|---|---|---|---|

(2) The function $f(x)=\sqrt[5]{x}$ is classified as

| (a) Polynomial | (b) Exponential | (c) Power | (d) Rational |
|---|---|---|---|

(3) The function $f(x)=1+3x^2-x^4$ is

| (a) Even | (b) Odd | (c) Neither even nor odd | (d) Even and odd |
|---|---|---|---|

(4) The range of the function $y=\log x$ is

| (a) $[0,\infty)$ | (b) $(-\infty,\infty)$ | (c) $(1,\infty)$ | (d) $(0,\infty)$ |
|---|---|---|---|

(5) The graph of $y=\cos x$ is shifted up 6 units and to the right 2 units, the equation for the new graph is

| (a) $y=\cos(x-2)+6$ | (b) $y=\cos(x+2)+6$ | (c) $y=\cos(x-2)-6$ | (d) $y=\cos(x+2)-6$ |
|---|---|---|---|

(6) If $f(x)=x-1$ and $g(x)=x^3-4x$, then the domain of $\left(\frac{g}{f}\right)(x)=$

| (a) $\mathbb{R}$ | (b) $\mathbb{R}-\{1\}$ | (c) $\mathbb{R}-\{-2,2\}$ | (d) $\mathbb{R}-\{-1\}$ |
|---|---|---|---|

(7) If $f(x)=\sqrt{x-3}$ and $g(x)=x^2$, then $(f\circ g)(x)=$

| (a) $\sqrt{x^2-3}$ | (b) $x(x-2)$ | (c) $x^2$ | (d) $\sqrt{x-3}$ |
|---|---|---|---|

(8) If the graph of $y=e^x$ is compressed vertically by a factor of 5 units, the equation for the new graph is

| (a) $y=e^x+5$ | (b) $y=5e^x$ | (c) $y=e^{x-5}$ | (d) $y=\frac{1}{5}e^x$ |
|---|---|---|---|

(9) Let $f(x)=1-3x^2$ and $g(x)=\cos x$, then $(f\circ g)(x)=$

| (A) $\cos(1+3x^2)$ | (B) $1+\cos x$ | (C) $1-3\cos^2 x$ | (D) $\cos(1-3x^2)$ |
|---|---|---|---|

(10) If the graph of $y=8x^2-4$ is compressed vertically by a factor of 4, the equation for the new graph is

| (A) $2x^2-1$ | (B) $4x^2-1$ | (C) $32x^2-16$ | (D) $32x^2+16$ |
|---|---|---|---|

(11) If the graph of $y=x^2$ is shifted up 2 units and left 3 units, the equation for the new graph is

| (A) $y=(x-3)^2-2$ | (B) $y=(x+3)^2-2$ | (C) $y=(x+3)^2+2$ | (D) $y=(x-3)^2+2$ |
|---|---|---|---|

(12) The function $y=\frac{x^3}{1-\sqrt{x}}$ is classified as

| (A) Polynomial | (B) Exponential | (C) Rational | (D) Algebraic |
|---|---|---|---|

(13) The function $f(x)=-2$ is

| (A) Even | (B) Odd | (C) Neither even nor odd | (D) Even and odd |
|---|---|---|---|