

Calculus Review Worksheet

(1) Find the domain and range of each of the following functions please.

(a) $y = \frac{x}{x^2 - 1}$

(c) $y = \frac{x}{x^2 + 1}$

(b) $y = -\sqrt{3x^2 - 5x - 2}$

(d) $y = -2 \sin\left(5x + \frac{\pi}{6}\right)$

(2) Find $f^{-1}(x)$ please.

(a) $f(x) = \frac{5x + 3}{7x + 6}$

(c) $f(x) = \sqrt[3]{2x - 3} + 5$

(b) $f(x) = \ln(3x + 2)$

(d) $f(x) = e^{2x}$

(3) Determine whether each of the following functions is odd, even or neither.

(a) $f(x) = \frac{3x^4 - 5x^2}{2x^2 + 9}$

(b) $f(x) = 5x - x \sec(2x)$

(4) Sketch a graph of each of the following please.

(a) $y = 3 \sin\left(2x - \frac{\pi}{2}\right)$

(c) $y = x^2 - 2$

(b) $y = \tan(3x)$

(d) $y = \sqrt{x + 3}$

(5) Find each of the following numbers please.

(a) $\sin\left(\frac{5\pi}{6}\right)$

(d) $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

(b) $\cos\left(\frac{5\pi}{4}\right)$

(e) $\cos^{-1}\left(-\frac{1}{2}\right)$

(c) $\tan(0)$

(f) $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$

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Answers

(1) (a) $D = \{x \mid x \neq \pm 1\}$
 $R = \{y \mid y \text{ is real}\}$

(c) $D = \{x \mid x \text{ is real}\}$
 $R = \{y \mid -\frac{1}{2} \leq y \leq \frac{1}{2}\}$

(b) $D = \{x \mid x \leq -\frac{1}{3} \text{ or } x \geq 2\}$
 $R = \{y \mid y \leq 0\}$

(d) $D = \{x \mid x \text{ is real}\}$
 $R = \{y \mid -2 \leq y \leq 2\}$

(2) (a) $f^{-1}(x) = \frac{-6x + 3}{7x - 5}$

(c) $f^{-1}(x) = \frac{1}{2}(x - 5)^3 + \frac{3}{2}$

(b) $f^{-1}(x) = \frac{e^x - 2}{3}$

(d) $f^{-1}(x) = \frac{1}{2} \ln(x)$

(3) (a) Even

(b) Odd

(5) (a) $\frac{1}{2}$

(d) $-\frac{\pi}{4}$

(b) $-\frac{\sqrt{2}}{2}$

(e) $\frac{2\pi}{3}$

(c) 0

(f) $-\frac{\pi}{6}$