

DO NOW

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1.3 Functions and Their Graphs

***You can use a graphing calculator to CHECK your work for finding domains and ranges - but YOU MUST be able to do the work without the calculator!!!

Page 2

Ex: pg 27; 26 (Evaluate the function as indicated. Determine its domain and range.)

$$f(x) = \begin{cases} x^2 + 2, & x \leq 1 \\ 2x^2 + 2, & x > 1 \end{cases}$$

(a) $f(-2)$

$$\begin{aligned} (-2)^2 + 2 \\ 4 + 2 \\ 6 \end{aligned}$$

(b) $f(0)$

$$\begin{aligned} 0^2 + 2 \\ 2 \end{aligned}$$

(c) $f(1)$

$$\begin{aligned} (1)^2 + 2 \\ 3 \end{aligned}$$

(d) $f(s^2 + 2) = 2x^2 + 2$

positive \nearrow

$$\begin{aligned} 2(s^2 + 2)^2 + 2 \\ 2(s^4 + 4s^2 + 4) + 2 \\ 2s^4 + 8s^2 + 8 + 2 \\ \boxed{2s^4 + 8s^2 + 10} \end{aligned}$$

Page 3

Ex: pg 27; 26 (Evaluate the function as indicated. Determine its domain and range.)

$$f(x) = \begin{cases} x^2 + 2, & x \leq 1 \\ 2x^2 + 2, & x > 1 \end{cases}$$

domain: $(-\infty, \infty)$

range: $x^2 + 2$ at $x = 1 \rightarrow y = 3$
 $x = 0 \rightarrow y = 2$
 $x = -1 \rightarrow y = 2$
 $[2, \infty)$

$2x^2 + 2$ at $x = 1 \rightarrow 4$
 $x = 2 \rightarrow 10$
 $(4, \infty)$

$$\boxed{[2, \infty)}$$

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HOMEWORK

pg 27 - 28; 25, 27, 28,

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