

BE-PRECALC TUESDAY 8-18-09

① Define "function"

② Give 4 names for the first & second values of an ordered pair $(?, ?)$

③ $f(x) = x^2$ $g(x) = x^3$ $h(x) = \frac{1}{x}$

Ⓐ $f(-\frac{1}{2})$ Ⓑ $g(5)$ Ⓒ $h(0)$

④ What key tells Excel you are entering a formula? What name does Excel use for a graph?

ACT
From Basics
1 min

In a shipment of 10,000 headlights, 5% are defective. What is the ratio of defective headlights to non-defective headlights?

ex) 10% of $10,000 = 1000 \therefore 5\% = 500$

$$\frac{500}{10,000 - 500} = \frac{500}{9500} = \frac{5}{95} = \boxed{\frac{1}{19}}$$

or By Definition $\frac{5\% \text{ bad}}{95\% \text{ good}} = \frac{1}{19}$

1.
⑤ Pg 11 # 46 (from homework)

$$g(x) = \frac{3-x}{5+x}$$

$$g(b^2+1) = \frac{3-(b^2+1)}{5+(b^2+1)}$$

$$g(b^2+1) = \frac{3-b^2-1}{5+b^2+1} = \boxed{\frac{2-b^2}{6+b^2}}$$

$$\sqrt{16} = ?$$

$$-\sqrt{16} = ?$$

$$\pm\sqrt{16} = ?$$

$$\sqrt{-16} = ?$$

$$\sqrt{16} = 4 \quad -\sqrt{16} = -4 \quad \pm\sqrt{16} = \pm 4 \quad \sqrt{-16} = \text{NO REAL ANSWER}$$

Ch. 1-2 Composition of Functions



First, operations with functions:

Examples of $+$, $-$, $\cdot$, $\div$ (see ex 1 pg 14)

$$f(x) = 3x^2 - 4 \quad g(x) = 4x + 5$$

$$\begin{aligned} \rightarrow \textcircled{A} \quad (f+g)(x) &= f(x) + g(x) \\ &= 3x^2 - 4 + 4x + 5 \\ &= 3x^2 + 4x + 1 \end{aligned}$$

$$\textcircled{\text{ex}} \quad (f+g)(2) = 3(2)^2 + 4(2) + 1 = 21$$

$$\begin{aligned} \rightarrow \textcircled{B} \quad (f-g)(x) &= f(x) - g(x) \\ &= 3x^2 - 4 - [4x + 5] \\ &= 3x^2 - 4 - 4x - 5 \end{aligned}$$

$$\begin{aligned} &= 3x^2 - 4x - 9 \\ \textcircled{\text{ex}} \quad (f-g)(2) &= 3(2)^2 - 4(2) - 9 = -5 \end{aligned}$$

$$\begin{aligned} \rightarrow \textcircled{C} \quad (f \cdot g)(x) &= f(x) \cdot g(x) = (3x^2 - 4)(4x + 5) \\ &= 12x^3 + 15x^2 - 16x - 20 \end{aligned}$$

$$\begin{aligned} \textcircled{\text{ex}} \quad (f \cdot g)(2) &= 12(2)^3 + 15(2)^2 - 16(2) - 20 \\ &= 96 + 60 - 32 - 20 = 104 \end{aligned}$$

$$\rightarrow \textcircled{D} \quad \left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} = \frac{3x^2 - 4}{4x + 5} \quad x \neq -\frac{5}{4}$$

$$\textcircled{\text{ex}} \quad (f \cdot g)(2) = \frac{3(2)^2 - 4}{4(2) + 5} = \frac{8}{13}$$

EX2 - Pg 14

Business, selling Yellowstone Park audio tapes.

Revenue $\Rightarrow r(x)$ from sale of x tapes

$$r(x) = 9.5x$$

Cost to $\Rightarrow c(x) = 0.8x + 1940$
make tapes

$\uparrow$ $\uparrow$
 cost per tape initial cost
 (the slope)

What function is the profit on x tapes?Profit $\Rightarrow p(x) \Rightarrow \text{profit} = \text{Revenue} - \text{Cost}$

$\uparrow$
 IF THIS IS NOT $>$ COST
 then business loses money

$$p(x) = (r - c)(x) = r(x) - c(x)$$

$$p(x) = 9.5x - [0.8x + 1940]$$

$$= 9.5x - 0.8x - 1940$$

$$\boxed{p(x) = 8.7x - 1940} \quad \text{Profit on } x \text{ tapes}$$

$$\textcircled{E} \quad p(1000) = 8.7(1000) - 1940$$

$$= 8700 - 1940$$

$$\boxed{p(1000) = 6760} \Rightarrow \text{Profit on 1000 tapes is } \$6760$$

• Homework: Pg 17 # 11 $\rightarrow$ 14