

① Solve $\begin{cases} 3x+2y=4 \\ 5x+3y=7 \end{cases}$ by the addition method.

② Solve $\begin{cases} 3x+y=5 \\ 4x-2y=10 \end{cases}$ by the substitution method.

① Solve by addition:

$$3x + 2y = 4 \xrightarrow{\times 3} 9x + 6y = 12$$

$$5x + 3y = 7 \xrightarrow{\times -2} -10x - 6y = -14$$



$$6 + 2y = 4$$
$$y = -1$$

$$-x = -2$$
$$\boxed{x = 2}$$

(2) Solve by substitution:

$$\begin{aligned} 3x + y &= 5 \rightarrow y = -3x + 5 \\ 4x - 2y &= 10 \end{aligned}$$

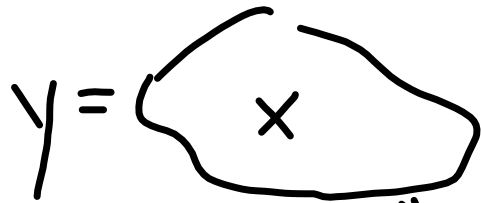
$$\begin{aligned} 4x - 2(-3x + 5) &= 10 \\ 4x + 6x - 10 &= 10 \\ 10x &= 20 \\ x &= 2 \end{aligned}$$
$$\begin{aligned} y &= -6 + 5 \\ y &= -1 \end{aligned}$$

$$y = \frac{2}{3}x - 4, \quad y = \sqrt{x+3} - 1,$$

$$y = x^2 - 3x - 6$$

$$g(x) = \sqrt{x+3} - 1$$

$$h(x) = x^2 - 3x - 6$$



→ "f of x" function

$$f(x) = \frac{2}{3}x - 4$$

x is input,
 $f(x)$ is output
 output

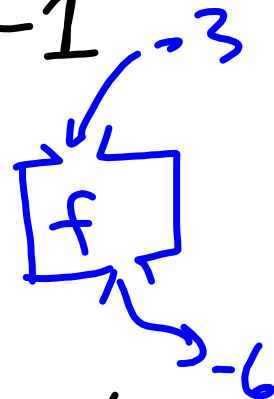
$$f(x) = \frac{2}{3}x - 4, \quad g(x) = \sqrt{x+3} - 1$$

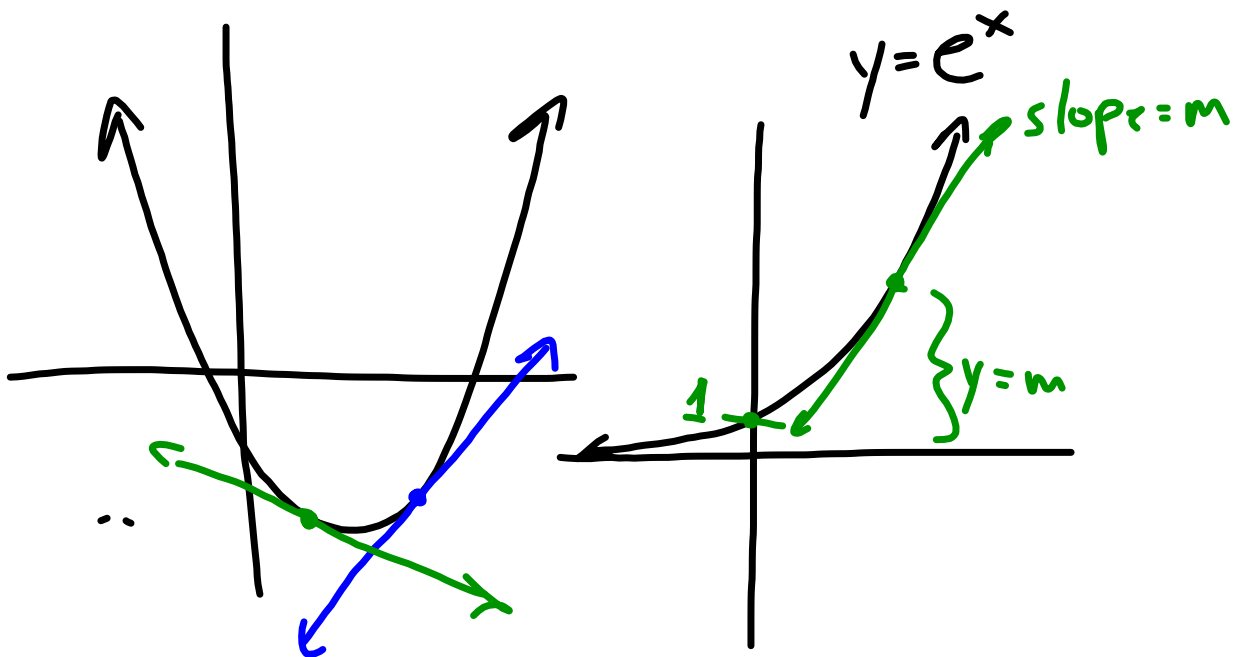
Find $f(-3)$

$$f(-3) = \frac{2}{3}(-3) - 4 = -2 - 4 = -6$$

Find $g(-2)$.

$$g(-2) = \sqrt{-2+3} - 1 = \sqrt{1} - 1 = 0$$





$$A = P + Prt \quad \text{Simple interest}$$

$$A = P \left(1 + \frac{r}{n}\right)^{nt} \quad \text{Compound}$$

$$A = P e^{rt} \quad \text{Continuously Compounded}$$

$$h(x) = x^2 - 3x - 6$$

Find $h(2)$

$$\begin{aligned} h(2) &= 2^2 - 3(2) - 6 \\ &= 4 - 6 - 6 \\ &= -8 \end{aligned}$$

$$h(x) = x^2 - 3x - 6$$

Find $h(a+2) = (a+2)^2 - 3(a+2) - 6$

and simplify

$$= (a+2)(a+2) - 3a - 6 - 6$$

$$= a^2 + 2a + 2a + 4 - 3a - 12$$

$$= a^2 + a - 8$$

$$\underline{h(x) = x^2 - 3x - 6}$$

Find all x such that $h(x) = -2$

$$-2 = x^2 - 3x - 6$$

$$0 = x^2 - 3x - 4$$

$$0 = (x - 4)(x + 1)$$

$$\boxed{x = -1, 4}$$

Exam 3 Tues, Feb 20

Will not have 5c, 6g, h

