

1. Factorise: $49^x - 7^{x+1} + 12$

$$7^{2x} - 7 \cdot 7^x + 12$$

$$(7^x)^2 - 7(7^x) + 12 \rightarrow a = 7^x$$

$$a^2 - 7a + 12$$

$$(a-4)(a-3)$$

$$\boxed{(7^x - 4)(7^x - 3)}$$

2. Simplify: $\frac{4^n - 2^n}{2^n}$

$$\frac{2^n \cdot 2^n - 2^n}{2^n}$$

$$\frac{2^n(2^n - 1)}{2^n} = \boxed{2^n - 1}$$

3. Solve for x: $9^{x-2} = \frac{1}{3}$

$$(3^2)^{x-2} = 3^{-1}$$

$$3^{2x-4} = 3^{-1}$$

$$2x - 4 = -1$$

$$2x = 3$$

$$\boxed{x = \frac{3}{2}}$$

* Make the bases equal
* Set the exponents equal to each other

4. Solve for x algebraically: $4^x - 7 \cdot 2^x - 8 = 0$

$$2^{2x} - 7(2^x) - 8 = 0 \quad a = 2^x$$

$$(2^x)^2 - 7(2^x) - 8 = 0 \rightarrow a^2 - 7a - 8 = 0$$

$$(a-8)(a+1) = 0$$

$$a-8=0 \quad a+1=0$$

$$a=8 \quad a=-1$$

$$(2^x - 8)(2^x + 1) = 0$$

$$2^x - 8 = 0$$

$$2^x + 1 = 0$$

$$2^x = 8$$

$$2^x = -1$$

$$2^x = 2^3$$

$$2^x = -(2)^0$$

$$\boxed{x=3}$$

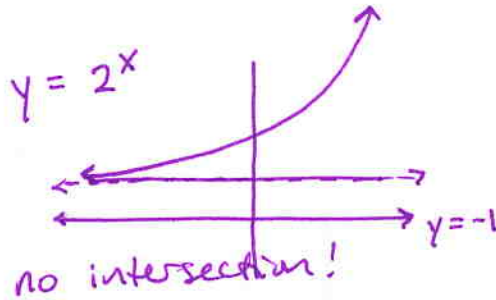
No Solution

Check

$$4^3 - 7 \cdot 2^3 - 8$$

$$64 - 56 - 8$$

$$0 \checkmark$$



5. Solve for x using your GFC: $4^x - 7 \cdot 2^x - 8 = 4$

$$y = 4^x - 7 \cdot 2^x - 8$$

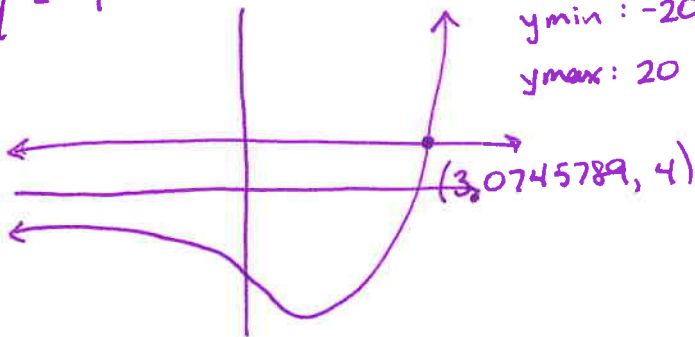
$$y = 4$$

$$x_{min} : -5$$

$$x_{max} : 5$$

$$y_{min} : -20$$

$$y_{max} : 20$$



$$\boxed{x \approx 3.075}$$

HW 3E (1-5) odd letters

→ Solve algebraically
→ Use your graphing calculator to check

TI-Nspire

Menu

Analyze Graph

Intersection

Lower and Upper Bounds

TI-83/84

2nd Calc

Intersect

1st Curve (Enter)

2nd Curve (Enter)

Guess? (Move cursor

near intersection, Enter)