6c) $5^{x+1} - 5^x + 5^{x+2} = \frac{29}{625}$

$5^x \cdot 5^1 - 5^x + 5^x \cdot 5^2 = \frac{29}{625}$

$5^x \left(5^1 - 1 + 5^2\right) = \frac{29}{625}$

$5^x \left(5 - 1 + 25\right) = \frac{29}{625}$

$5^x \left(29\right) = \frac{29}{625}$

$5^x = \frac{29}{625} \cdot \frac{1}{29} \Rightarrow 5^x = \frac{1}{625}$

$5^x = \frac{1}{5^4}$

$5^x = 5^{-4}$

$\boxed{x = -4}$

625	5
125	5
25	5
5	5
1	

$625 = 5^4$

6e) $2^{2x} - 17 . 2^{x-3} = -\frac{1}{4}$

$(2^x)^2 - 17 . 2^x . \frac{1}{2^3} = -\frac{1}{4}$

Sustituimos $\Rightarrow$ $2^x = y$

$y^2 - \frac{17}{8} y + \frac{1}{4} = 0$

$a = 1$
$b = -17/8$
$c = 1/4$

$\left.\begin{matrix} y_1 \\ y_2 \end{matrix}\right\} = \frac{17/8 \pm \sqrt{(17/8)^2 - 4 . 1/4}}{2}$

(A) $y_1 = 2$

(B) $y_2 = \frac{1}{8}$

(A) $2^x = 2^1 \Rightarrow \boxed{x = 1}$

(B) $2^x = 2^{-3} \Rightarrow \boxed{x = -3}$

6f) $\log_2(x+2) + \log_2(5x+2) = 8$

$$\log_2[(x+2)\cdot(5x+2)] = 8$$

$$2^8 = (x+2)(5x+2)$$

$$256 = 5x^2 + 2x + 10x + 4$$

$$0 = 5x^2 + 12x - 252$$

$a = 5$
$b = 12$
$c = -252$

$$\left.\begin{matrix} x_1 \\ x_2 \end{matrix}\right\} = \frac{-12 \pm \sqrt{12^2 + 4.5.252}}{2.5}$$

$$\left.\begin{matrix} x_1 \\ x_2 \end{matrix}\right\} = \frac{-12 \pm \sqrt{5184}}{10}$$

→ $\boxed{x_1 = 6}$

→ $x_2 = 8,4$

Verificación para x_1

$$\underbrace{\log_2(6+2)}_{3} + \underbrace{\log_2(5.6+2)}_{5} = 8$$

$3 + 5 = 8$ Correcto!!!

Verificación para x_2

$$\underbrace{\log_2(8,4+2)}_{3,38} + \underbrace{\log_2(5.8,4+2)}_{5,39} = 8$$

$3,38 + 5,39 \neq 8$ Incorrecto

6g) $\log_6 (x+10) + \log_6 (x-2) = 2$

$$\frac{\log_{10}(x+10)}{\log_{10}(6)} + \frac{\log(x-2)}{\log(6)} = 2$$

$$\log(x+10) + \log(x-2) = 2 \cdot \log(6)$$

$$\log\left((x+10)\cdot(x-2)\right) = \log 6^2$$

$$(x+10)(x-2) = 36$$

$$x^2 - 2x + 10x - 20 = 36$$

$$x^2 + 8x - 20 - 36 = 0$$

$$x^2 + 8x - 56 = 0$$

$a = 1$
$b = 8$
$c = -56$

$$x_1 = \frac{-8 + \sqrt{64 + 4 \cdot 56}}{2} = \frac{-8 + 16{,}97}{2}$$

$$\boxed{x_1 = 4{,}49}$$

~~$\boxed{x_2 = -12{,}49}$~~ Se descarta porque no se puede obtener un log. de un nro negativo

$\log_6 (x+10)$

$\log_6 (-12{,}49 + 10)$

$\log_6 (-2{,}49)$ ← ?