

5:

$$i = 3x + 4 = 7x$$

$$\log_{4.3}(x+4) = \log_{7x} (3x+4) \log_3 = 2x \log_7$$

$$(2x+4) 0.4771 = 0.8450x$$

$$0.4771x - 0.8450x = 1.9084 \quad -0.3679x = 1.9084$$

$$x = 4.5184$$

$$ii = \log(2x+5) + \log(x+2) = \log(x+7) + \log(x+6)$$

$$(x+5)(x+2) = (x+7)(x+6)$$

$$x^2 + 2x + 5x + 10 = x^2 + 6x + 7x + 42$$

$$7x + 10 = 13x + 42$$

$$7x - 13x = 42 - 10$$

$$-6x = 32$$

$$x = -5.3$$

6:

$$i = \int x^8 + 4x^3 + 5x - 1 \, dx = \frac{x^9}{9} + \frac{4x^4}{4} + 5x - x + C$$

$$ii = \int 3x^2 (x^3 + 2x + 1) \, dx = \int (3x^5 + 6x^3 + 3x^2) \, dx = \frac{3x^6}{6} + \frac{6x^4}{4} + \frac{3x^3}{3} + C$$

$$iii = \int 5 \sin 3x \, dx = \int 5 \cos 3x \, dx = \frac{5}{3} \sin 3x + C$$

$$iv = \int_0^5 (x+5)(x+1) \, dx = \int_0^5 (x^2 + 6x + 5) \, dx = \left[\frac{x^3}{3} + 3x^2 + 5x \right]_0^5$$

$$= \left[\frac{125}{3} + 75 + 25 \right] - 0 = 156.67$$