

Exponent sheet

1. $27^x = 3^4$

$$(3^3)^x = 3^4$$

~~$$3^{3x} = 3^4$$~~

$$3x = 4$$

$$x = \frac{4}{3}$$

2. $4^{3x+5} = 2^{4x-3}$

$$(2^2)^{3x+5} = 2^{4x-3}$$

~~$$2^{6x+10} = 2^{4x-3}$$~~

$$6x+10 = 4x-3$$

$$6x-4x = -3-10$$

$$2x = -13$$

$$x = \frac{-13}{2}$$

$$3. \quad 5^{2x-3} = \frac{1}{25}$$

$$5^{2x-3} = 25^{-1}$$

$$5^{2x-3} = (5^2)^{-1}$$

~~$$5^{2x-3} = 5^{-2}$$~~

$$2x - 3 = -2$$

$$2x = 1$$

$$x = \frac{1}{2}$$

$$4. \quad x = -14$$

$$5. \quad x = \frac{11}{5}$$

$$6. \quad x = 3$$

$$7. \quad x = 2$$

$$8. \quad x = 0$$

$$9. \quad x = 2$$

$$10. \quad x = -\frac{1}{3}$$

$$11. \quad x = -\frac{3}{4}$$

$$12. \quad x = \frac{3}{2}$$

$$13. \quad x = \frac{1}{8}$$

$$14. \quad x = \frac{1}{12}$$