

1. $97^{x^2} = 97^{48}$

$$x = \pm 4\sqrt{3}$$

2. $1.1^{9x^2} = 1.1^{36x}$

$$x = 0$$

$$x = 4$$

3. $\frac{6^{11x}}{6^{7x}} = 36^{x-4}$

$$x = -4$$

4. $6^{4x-5} = 216$

$$x = 2$$

5. $4^{5x} = 64^{x-4}$

$$x = -6$$

6. $8^{x^2} = 4096$

$$x = \pm 2$$

7. $\frac{7^{2x^2}}{7^{13x}} = 7^7$

$$x = 7$$

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

8. $5^{4x} * 5^{x-3} = 25^x$

$$x = 1$$

9. $4^{x^2+8} = 1$

$$x = \pm 2, \pm \sqrt{2}$$

$$10. 32^{x+2} = 16^{x+5}$$

$$x = 10$$

$$11. 3^{x^2-x} = 9^6$$

$$x = 4$$

$$x = -3$$

$$12. \frac{19^{81}}{19x^2} = 1$$

$$x = \pm 9$$

$$13. 17^x * 17^x = 17^{7x-15}$$

$$x = 3$$

$$14. 81^{2x} = 729^{x+1}$$

$$x = 3$$

$$15. 64 = 1024^{x-2}$$

$$x = 2.6$$

$$16. 14^{x-7} * 14^{4x+1} = 14^{2x}$$

$$x = 2$$

$$17. \frac{13^{5-2x}}{13^{4x-2}} = 13^{x-7}$$

$$x = 2$$

$$18. 3^{6-x} = 243$$

$$x = 1$$