

Finish each of the following statements. *You* need to provide examples to accompany these.

1.  $(a - b)^2 = a^2 - 2ab + b^2$

2.  $(a + b)^2 = a^2 + 2ab + b^2$

3.  $(a - b)(a + b) = a^2 - b^2$

4.  $a^b a^c = a^{b+c}$

5.  $(ab)^c = a^c b^c$

6.  $a^{-c} = \frac{1}{a^c}$

7.  $\frac{1}{a^{-c}} = a^c$

8.  $(ab)^c = a^c b^c$

9.  $\left(\frac{a}{b}\right)^c = \frac{a^c}{b^c}$

10.  $\frac{a^b}{a^c} = \frac{a^{b-c}}{1}$  or  $\frac{1}{a^{c-b}}$

11.  $(a^b d^c)^t = a^{bt} d^{ct}$

12.  $\left(\frac{a^b}{c^d}\right)^e = \frac{a^{bc}}{c^{de}}$

13.  $a^0 = 1$

14.  $\sqrt[r]{x^m} = x^{\frac{m}{r}}$

15. The discriminant for  $ax^2 + bx + c = 0$  is  $b^2 - 4ac$

16. If  $ax^2 + bx + c = 0$ , then

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

17.  $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$

18.  $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

19.  $a^2 - b^2 = (a - b)(a + b)$