

Factoring Polynomials: Exercise 2

Name: _____

Date: _____

[21 marks total]

Perfect Squares

A) [9 marks] Factor each of the following.

1) $x^2 + 14x + 49 = (x+7)^2$

2) $a^2 - 38a + 361 = (a-19)^2$

3) $4b^2 - 44b + 121 = (2b-11)^2$

4) $729d^2 + 2322d + 1849 = (27d+43)^2$

5) $6561f^4 - 12150f^2 + 5625 = (81f^2 - 75f)^2 = 9(27f^2 - 25f)^2$

6) $324k^2 - 828km + 529m^2 = (18k-23m)^2$

7) $1444g^4 + 6916g^2h^2 + 8281h^4 = (38g^2 + 91h^2)^2$

8) $26569n^{14} - 82804n^{17}p^{23} + 64516p^{46} = (163n^{17} - 254p^{23})^2$

B) [8 marks] Find the value of k (the coefficient) in each of the following, if each polynomial is a perfect square.

1) $49q^2 - kq + 25$ k = -70 or 70

2) $121r^2 + 198r + k$ k = 9

3) $kt^2 - 312t + 144$ k = 169

4) $1369p^2 - 1554pq + kq^2$ k = 21

5) $7569t^4 + kt^2w^3 + 3481w^{18}$ k = 5153

6) $kc^{1022}y^{1444} - 1658468x^{722}y^{1733} + 729316x^{422}y^{3820}$ k = 942841

C) [4 marks] List the characteristics of a perfect square quadratic.

Factors into identical binomials