Name: _____ Blk: _____ Date: _____

Math 10

Ch 3 Factoring Review

Key

Factor completely, if possible.

1) $x^2+5x-36$

$9 \cdot -4$

$=(x+9)(x-4)$ //

2) $2x^2+7x+3$ $\quad 6 \;/\; 6 \cdot 1$

$=\frac{(2x+6)}{2}(2x+1)$

$=(x+3)(2x+1)$ //

3) x^2-49

$=(x+7)(x-7)$ //

4) $4ab+3ac-a$

$=a(4b+3c-1)$ //

5) $x^2-9x-10$ $\quad -10 \;/\; 1$

$=(x-10)(x+1)$

6) $4x^2-25$

$=(2x+5)(2x-5)$

7) $-18x^2-15x+18$

$-3(x^2+5x-6)$ $\quad 6 \;/\; -1$

$=-3(x+6)(x-1)$ //

8) $6x^2+7xy+y^2$ $\quad 6 \;/\; 6 \cdot 1$

$\frac{(6x+6y)}{6}(6x+y)$

$=(x+y)(6x+y)$ //

9) $x(x-2)-5(x-2)$

$=(x-2)(x-5)$ //

10) x^2+1

can't be factored

11) $15x^2-13x+2$ $\quad 30 \;/\; -10 \cdot -3$

$=\frac{(15x-10)}{5}\frac{(15x-3)}{3}$

$=(3x-2)(5x-1)$ //

12) $32+4x-x^2$

$=-x^2+4x+32$ $\quad -32 \;/\; -8 \cdot 4$

$=-(x^2-4x-32)$

$=-(x-8)(x+4)$

OR $(8-x)(x+4)$

13) $x^4-13x^3+42x^2$ $\quad 42 \;/\; -6 \cdot -7$

$=x^2(x^2-13x+42)$

$=x^2(x-6)(x-7)$ //

14) $2x^3+3x^2-8x-12$

$=x^2(2x+3)-4(2x+3)$

$=(2x+3)(x^2-4)$

$=(2x+3)(x+2)(x-2)$ //

15) $16y^4-1$

$=(4y^2+1)(4y^2-1)$

$=(4y^2+1)(2y+1)(2y-1)$ //

16) $3x^2+2x-1$ $\quad -3 \;/\; 3 \cdot 1$

$=\frac{(3x+3)}{3}(3x-1)$

$=(x+1)(3x-1)$ //

17) $5x^2-12x-6$ $\quad -30 \;/\; -15 \cdot 2$

$=\frac{(5x-15)}{5}(5x+2)$

$=(x-3)(5x+2)$ //

18) $12a^2+28a-24$ $\quad -18 \;/\; 9 \cdot -2$

$=4(3a^2+7a-6)$

$=4\frac{(3a+9)}{3}(3a-2)$

$=4(a+3)(3a-2)$ //

19) $5x(x-2)+3(2-x)$

$=5x(x-2)-3(x-2)$

$=(x-2)(5x-3)$ //

20) $2x^2-13x+21$ $\quad 42 \;/\; -6 \cdot -7$

$=\frac{(2x-6)}{2}(2x-7)$

$=(x-3)(2x-7)$ //

21) $50x^2-98y^2$

$=2(25x^2-49y^2)$

$=2(5x+7y)(5x-7y)$ //

22) $25x^2-75xy+25y^2$

$=25(x^2-3xy+y^2)$ //

23) $2x^2-x-1$ $\quad -2 \;/\; -2 \cdot 1$

$=\frac{(2x-2)}{2}(2x+1)$

$=(x-1)(2x+1)$ //

24) $42+x-x^2$ $\quad -42 \;/\; 6 \cdot -7$

$=-x^2+x+42$

$=-(x^2-x-42)$

$=-(x+6)(x-7)$

OR $(x+6)(7-x)$

25) $9x^2-48x+64$

$=(3x-8)(3x-8)$

$-24x$ ADDs to $-48x$

$=(3x-8)^2$ //

26) $x^2-11xy+6xy-66y^2$

$=x(x-11y)+6y(x-11y)$

$=(x-11y)(x+6y)$ //

27) $18x^2-21x+6$ $\quad 12 \;/\; -4 \cdot -3$

$=3(6x^2-7x+2)$

$=3\frac{(6x-4)}{2}\frac{(6x-3)}{3}$

$=3(3x-2)(2x-1)$ //

28) $-18y^2-8$
$= -2(9y^2+4)$ //

29) $a^2-(x+1)^2$
$= [a+(x+1)][a-(x+1)]$
$= (a+x+1)(a-x-1)$ //

30) $\frac{4}{9}x^2-\frac{49}{25}y^2$
$\left(\frac{2}{3}x+\frac{7}{5}y\right)\left(\frac{2}{3}x-\frac{7}{5}y\right)$ //

31) $5x^2-12x-6$
can't be factored

32) $2x^2-16x-66$
$= 2(x^2-8x-33)$ (-33 → -11, 3)
$= 2(x-11)(x+3)$ //

33) $2x^2-11x+15$
$= \frac{(2x-6)}{2}(2x-5)$ (30 → -6, -5)
$= (x-3)(2x-5)$ //

34) $m^2n^2+4mn-32$
(8, -4)
$= (mn+8)(mn-4)$ //

35) x^8-1
$= (x^4+1)(x^4-1)$
$= (x^4+1)(x^2+1)(x^2-1)$
$= (x^4+1)(x^2+1)(x+1)(x-1)$ //

36) $2x^2y^2-6xy^2-56y^2$
$= 2y^2(x^2-3x-28)$ (-7, 4)
$= 2y^2(x-7)(x+4)$ //

37) $4x^2-7x-2$
$= \frac{(4x-8)}{4}(4x+1)$ (-8 → -8, 1)
$= (x-2)(4x+1)$ //

38) $4x^2+144x^3$
$4x^2(1+36x)$
OR $4x^2(36x+1)$

39) x^2-x+1
can't be factored

Determine the integer value(s) of k such that the following can be factored.

1) x^2+kx+6

1, 6	7
-1, -6	-7
3, 2	5
-3, -2	-5

2) x^2+kx-8

+4, -2	+2
2, -4	-2
8, -1	7
1, -8	-7

3) $3x^2+kx-4$ (-12 → 1, -12; +12, -1; 2, -6; -2, 6; 3, -4; -3, 4)

1, -12	-11
+12, -1	11
2, -6	-4
-2, 6	4
3, -4	-1
-3, 4	1

Determine the value of k, such that the following is a perfect square trinomial.

1) $x^2+kx+36$
$= (x+6)^2$
$k=12$

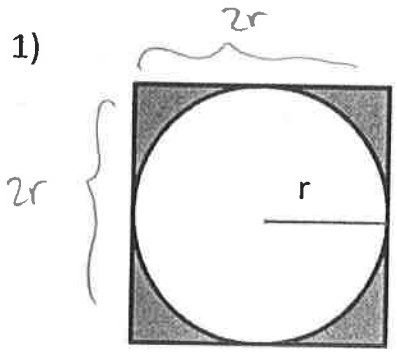
2) $x^2+20x+k$
$(x+10)^2$
$k=100$

3) $4x^2+kx-25$ (oops should be ⊕)
$(2x+5)^2$
$k=20$

4) $9x^2-24x+k$
$(3x-4)^2$
$k=16$

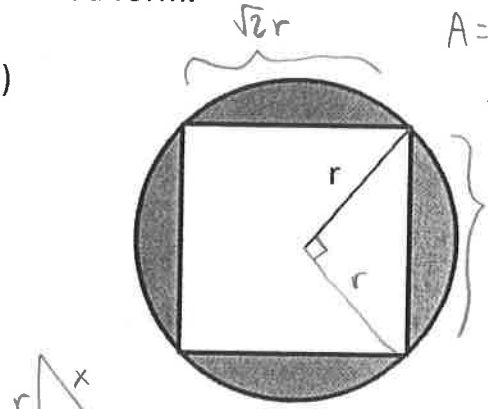
Determine the area of the shaded region in factored form.

1)



$A =$ ▢ − ○
$= (2r)^2 - \pi r^2$
$= 4r^2 - \pi r^2$
$= r^2(4-\pi)$ //

2)



$A =$ ○ − ▢
$= \pi r^2 - (\sqrt{2}r)^2$
$= \pi r^2 - 2r^2$
$= r^2(\pi-2)$ //

$r^2+r^2 = x^2$
$2r^2 = x^2$
$\sqrt{2}r = x$