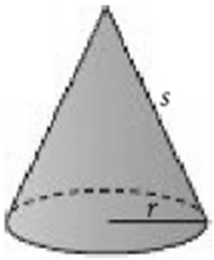
DAY 5 – Mix of Factoring

1. Factor each of the following fully.

a. $-x^2 + 7x - 12$ $= -1(x^2 - 7x + 12)$ $= -1(x-3)(x-4)$	b. $3x^2 - 3$ $= 3(x^2 - 1)$ $= 3(x-1)(x+1)$	c. $32x^2 - 200$ $= 8(4x^2 - 25)$ $= 8(2x-5)(2x+5)$
d. $48x^2 - 27y^2$ $= 3(16x^2 - 9y^2)$ $= 3(4x-3y)(4x+3y)$	e. $3a^2 - 36a - 39$ $= 3(a^2 - 12a - 13)$ $= 3(a-13)(a+1)$	f. $5x^2 + 10x + 5$ $= 5(x^2 + 2x + 1)$ $= 5(x+2)(x+1)$
g. $4x^2 + 28x + 24$ $= 4(x^2 + 7x + 6)$ $= 4(x+6)(x+1)$	h. $8e^2 - 50$ $= 2(4e^2 - 25)$ $= 2(2e-5)(2e+5)$	i. $2y^2 - 6y - 8$ $= 2(y^2 - 3y - 4)$ $= 2(y-4)(y+1)$

2. The surface area of a cone is given by the formula $SA = \pi r^2 + \pi rs$.



   a. Factor the expression for the surface area.

   $SA = \pi r(r+s)$

   b. Five cones all have a radius of 20 cm. Their slant height, *s*, is given in the table. Find the surface area of each cone.

Slant Height (cm)
40
45
50
55
60

$SA = 3.14(20)(20+40) = 3768\text{ cm}^2$
$SA = 3.14(20)(20+45) = 4082\text{ cm}^2$
$SA = 3.14(20)(20+50) = 4396\text{ cm}^2$
$SA = 3.14(20)(20+55) = 4710\text{ cm}^2$
$SA = (3.14)(20)(20+60) = 5024\text{ cm}^2$

   c. A cone has a slant height that is 3 times its radius. Use your answer to part (a) to write a simpler form of the expression for the surface area for this cone.

$s = 3r$
$SA = \pi r(r+3r)$
$SA = \pi r(4r) = 4\pi r^2$ (wow, this is the surface area of a sphere!!)