NAME ______________________________ DATE ______________

Practice 55

FOR USE WITH SECTION 9.2

Multiply.

1. $(7n - 3)(8n + 5)$ **2.** $(x - 2)(x^2 + 2x + 4)$ **3.** $(-5t + 11)^2$

4. $k(k + 2)(k - 9)$ **5.** $(y^2 - 3)(y + 6)$ **6.** $3p^2(p + 1)(p - 1)$

7. $(5a + 4)(a^2 - 3a + 2)$ **8.** $(6y^2 + 11y - 7)(2y - 9)$ **9.** $(b - 5)^3$

10. $(1 - 3r)(1 + 3r)(1 - r)$ **11.** $(2 - w)^4$ **12.** $(t^2 - \sqrt{2}t + 1)(t^2 + \sqrt{2}t + 1)$

Divide.

13. $\frac{v^2 - 5v + 7}{v - 3}$ **14.** $\frac{3x^2 + 4x - 8}{x - 2}$ **15.** $\frac{4t^2 - 25}{t + 1}$

16. $\frac{2y^2 + 7y}{y + 3}$ **17.** $\frac{n^3 - 3n^2 + n - 5}{n - 1}$ **18.** $\frac{6k^3 + k^2 - 9k + 3}{2k + 1}$

19. $\frac{9x^3 - 4x + 1}{3x - 1}$ **20.** $\frac{2u^3 + 5u^2 - 10u - 4}{u^2 + 4u + 1}$ **21.** $\frac{6a^3 - 5a^2 - 6a + 7}{2a^2 + a - 3}$

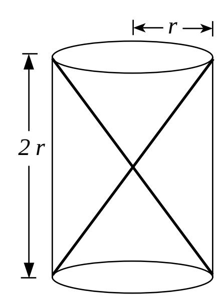
22. One can find the amount of sheet metal (usually steel) that is needed to form a "tin" can by adding the areas of the top and bottom to the area of the curved surface of the can.

a. Express the combined area of the top and bottom in terms of the radius r of the can.

b. Suppose the height of a can is to be 4 in. Express the area of the curved surface of the can in terms of r, the radius of the top.

c. Express the total surface area of the can as a polynomial in r.

23. In about 300 B.C., the Greek mathematician Archimedes discovered the following amazing fact: If you put a "double cone" of radius r and height $2r$ inside a cylinder of radius r and height $2r$, the material of a sphere of radius r would exactly fill the empty space between the double cone and the cylinder.



a. Express the volumes of the double cone and the cylinder in terms of r.

b. Use Archimedes' discovery to obtain a formula for the volume of a sphere of radius r.

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