7.1 Square Roots p. 290

A **square root** of a number is a number that, when multiplied by itself, equals the given number.
Every positive number has a positive and a negative square root.
A **perfect square** is a number with **integers** as its square roots.

① Find the two square roots of :

a) 49 — 7 and -7

b) 100 — 10 and −10

$\sqrt{}$ **radical sign** represents a square root
The **number under** the radical sign is called the **radicand**.

$\sqrt{16} = 4$ $\quad -\sqrt{16} = -4$ $\quad \pm\sqrt{16} = \pm 4$

↳ we say **plus or minus**

② a) $\sqrt{25} = 5$

b) $-\sqrt{36} = -6$

c) $-\sqrt{\frac{9}{16}} = -\frac{\sqrt{9}}{\sqrt{16}} = -\frac{3}{4}$

d) $\pm\sqrt{2.25} = \pm 1.5$

e) $-\sqrt{1} = -1$

f) $\pm\sqrt{\frac{4}{25}} = \pm\frac{2}{5}$

③ Evaluate

a) $5\sqrt{36} + 7$

$5(6) + 7$

$30 + 7$

$\boxed{37}$

b) $\frac{1}{4} + \sqrt{\frac{18}{2}}$

$\frac{1}{4} + \sqrt{9}$

$\frac{1}{4} + 3$

$\boxed{3\frac{1}{4}}$

c) $\left(\sqrt{81}\right)^2 - 5$

$81 - 5$

$\boxed{76}$

* Squaring a positive number and finding a square root are inverse operations (they undo each other)

ex: $\left(\sqrt{3}\right)^2 = 3$

d) $12 - 3\sqrt{25}$

$12 - 3(5)$

$12 - 15$

$\boxed{-3}$

e) $\sqrt{\frac{28}{7}} + 2.4$

$\sqrt{4} + 2.4$

$2 + 2.4$

$\boxed{4.4}$

f) $15 - \left(\sqrt{4}\right)^2$

$15 - 4$

$\boxed{11}$

g) The area of a circle is 2826 square feet. Write and solve an equation to find the radius of the circle. $A = \pi r^2$

$\frac{2826}{3.14} = \frac{3.14r^2}{3.14}$

$900 = r^2$

$\sqrt{900} = r$

$\boxed{30 = r}$