

$k \backslash m$	0	1	2
0	0,0,0,0	1,1,1,1	2,2,2,2,2
1	0,1,2,0,1	1,2,0,1,2,0	2,0,1
2	0,2,1,0,2	1,0,2,1,0,2	

$DC = \frac{2}{3}r$
 $4r^2 + x^2 = \left(\frac{4}{3}r + x\right)^2$
 $P = \frac{25}{6}r^2$
 $x^2 = \frac{25}{6}r^2$
 $x = \frac{5}{\sqrt{6}}r$

The image contains two handwritten diagrams and several formulas used to find the radius of a circle inscribed in a triangle.

Top Diagram: A circle is inscribed in a triangle with vertices A, B, and C. The center is H. The radius is labeled R. The distance from the center to the base AB is labeled h. The distance from the center to the side AC is labeled b. The distance from the center to the side BC is labeled a. The distance from the center to the side AB is labeled h. The distance from the center to the side AC is labeled b. The distance from the center to the side BC is labeled a. The distance from the center to the side AB is labeled h. The distance from the center to the side AC is labeled b. The distance from the center to the side BC is labeled a.

Formulas:

- $\triangle CDB \sim \triangle CHS$ (kkk)
- $\frac{h}{\frac{1}{2}b} = \frac{b}{R} = \frac{a}{SH}$ (sindes)
- $a^2 + h^2 = b^2$

Bottom Diagram: A triangle with base AB and height h. A circle is inscribed with radius r. The distance from the base to the center is labeled r. The distance from the center to the side AC is labeled b. The distance from the center to the side BC is labeled a. The distance from the center to the side AB is labeled h.

Formulas:

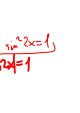
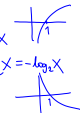
- 1) $r^2 + (b-a)^2 = (h-r)^2$
- 2) $h^2 + a^2 = b^2$
- 3) $\frac{r}{a} = \frac{h-r}{b}$

$3 \cos^2 x + 3 \sin^2 x = 4$

$y = \log_2 x$
 $y = \log_2 x = -\log_2 x$
 $y = \log_2 x$

$x > -2$
 $x \in (0, 1) \cup (1, +\infty)$
 $x \in (0, 1)$ $\frac{1}{x} > x^2$
 $x \in (1, +\infty)$ $\frac{1}{x} < x^2$
 $x^2 - x - 2 > 0$
 $(x-2)(x+1) > 0$
 $x > 2$ or $x < -1$
 $x \in (2, +\infty)$
 $x \in (0, 1)$

$3 \sin^2 x + 3 \cos^2 x = 4$
 $3(1 - \sin^2 x) + 3 \sin^2 x = 4$
 $3 - 3 \sin^2 x + 3 \sin^2 x = 4$
 $3 = 4$ (contradiction)
 $\sin^2 2x = 0$ $\sin 2x = 0$
 $2x = k\pi$
 $x = \frac{k\pi}{2}$



$P(x) = x^3 + mx + 162$
 $(x-x_1)(x-x_2)(x-x_3)$
 $(x-x_1)^2(x-x_2)$
 $(x-x_1)(x-x_1)(x-x_2)$
 $x^3 + x^2(-x_2) + x(2x_1x_2 - x_1^2) - x_1^2x_2$
 $x^3: 1=1$
 $x^2: 0 = -x_2 \Rightarrow x_2 = 0$
 $x: m = 2x_1x_2 - x_1^2$
 $x^0: 162 = -x_1^2x_2$
 $P(x) = (x-3\sqrt{3})^2(x+6\sqrt{3})$
 $P(-\sqrt{3}) = (-\sqrt{3}-3\sqrt{3})^2(-\sqrt{3}+6\sqrt{3})$
 $162 = 8x_1^3$
 $81 = x_1^3$
 $x_1 = 3\sqrt{3}$
 $x_2 = -6\sqrt{3}$
 $\sqrt{3} \sqrt{3} \sqrt{3}$

$2a^2 + a = 3b^2 + b \quad ab \in \mathbb{Z}$
 $5 | a - b$
 $T: 25 | a - b$

