n.1. $\frac{x-3}{3} - \frac{5}{x-2} = \frac{2}{3}$

(1) $\frac{x-2}{3} - \frac{5}{x-2} = \frac{2}{3}$

$\frac{x-2}{3} - \frac{2}{3} = \frac{5}{x-2}$

$\frac{x-4}{3} = \frac{5}{x-2}$

$(x-4)(x-2) = 15$

$x^2 - 6x + 8 = 15$

$x^2 - 6x - 7 = 0$

$(x-7)(x+1)$

$x = 7, -1$

n.2. $24x^2 + 74x + 55 = 0$

$(6x+11)(4x+5)$

$x = -\frac{11}{6}, -\frac{5}{4}$

$a = -\frac{5}{4}, \quad b = \frac{11}{6}$

$A - B = -\frac{5}{4} - \left(-\frac{11}{6}\right)$

$A - B = -\frac{5}{4} + \frac{11}{6}$

$A - B = \frac{-15+22}{12} = \frac{7}{12}$

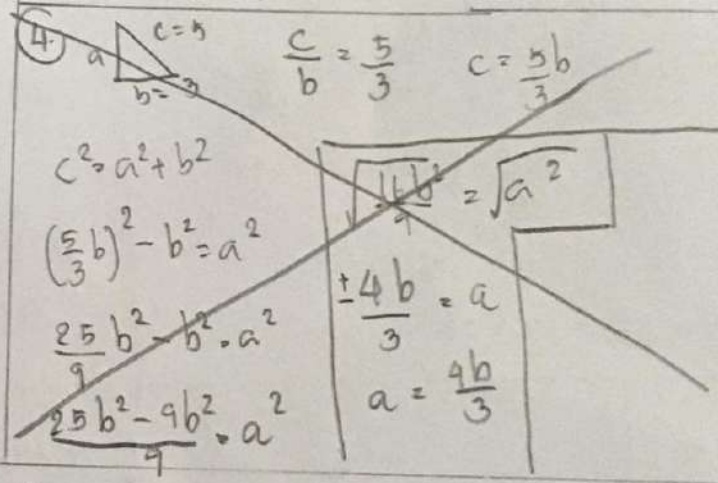
$A - B = \frac{7}{12} = 0.583$

3. $ax^2 - bx - c = 0$

$x = \frac{-(-b) \pm \sqrt{b^2 - 4a(-c)}}{2a}$

$x = \frac{b \pm \sqrt{b^2 + 4ac}}{2a}$

(4)



$\frac{c}{b} = \frac{5}{3}$ $\quad c = \frac{5}{3}b$

$c^2 = a^2 + b^2$

$\left(\frac{5}{3}b\right)^2 - b^2 = a^2$

$\frac{25}{9}b^2 - b^2 = a^2$

$\frac{25b^2 - 9b^2}{9} = a^2$

$\sqrt{\frac{16b^2}{9}} = \sqrt{a^2}$

$\pm\frac{4b}{3} = a$

$a = \frac{4b}{3}$

(5) $\frac{x^2}{x+1} + \frac{2x+2}{x^2} = 3$ ให้ $y = \frac{1}{x} + \frac{1}{x^2}$ $\quad y < 1$ แล้ว $y = ?$

$y = \frac{x+1}{x^2}$ $\quad \frac{x^2}{x+1} + \frac{2x+2}{x^2} = 3$ $\quad \frac{x^2}{x+1} + \frac{2(x+1)}{x^2} = 3$

แทน y

$\frac{1}{y} + 2y = 3 \therefore$ คูณ y

$1 + 2y^2 = 3y$

$2y^2 - 3y + 1 = 0$

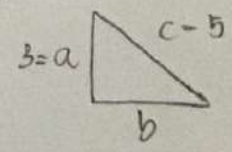
$2y^2 - 3y + 1 = 0$

$(2y-1)(y-1) = 0$

$y = \frac{1}{2}, 1$

$y < 1 \therefore y = \frac{1}{2}$

④



$\frac{c}{a} = \frac{5}{3}$ $\quad c = \frac{5}{3}a$

$c^2 = a^2 + b^2$

$\left(\frac{5}{3}a\right)^2 = a^2 + b^2$

$\left(\frac{5}{3}a\right)^2 - a^2 = b^2$

$\frac{25}{9}a^2 - a^2 = b^2$

$\frac{25a^2 - 9a^2}{9} = b^2$

$\sqrt{\frac{16a^2}{9}} = \sqrt{b^2}$

$\pm \frac{4a}{3} = b$

$a = \frac{3}{4}b$

พื้นที่ $= \frac{1}{2} \times$ ฐาน $\times$ สูง

$72 = \frac{1}{2} \times \frac{3}{4}b \cdot b$

$72 = \frac{3}{8}b^2$

$\sqrt{192} = \sqrt{b^2}$

$b = \sqrt{192}$ #

---

⑥ $x^2 + bx + c = (x+\sqrt{3})(x+\sqrt{2})$ จง $b+c$

$= x^2 + \sqrt{3}x + \sqrt{2}x + \sqrt{3}\cdot\sqrt{2}$

$= x^2 + (\sqrt{3}+\sqrt{2})x + \sqrt{6}$

$a \quad b \quad c$

$b = \sqrt{3}+\sqrt{2}$, $c = \sqrt{6}$

$b + c = \sqrt{3} + \sqrt{2} + \sqrt{6}$

---

⑦ $ax^2 - kx = 1$

$ax^2 - kx - 1 = 0$ $\quad r_1, r_2$ เป็นราก

$a = a \quad b = -k \quad c = -1$

$-\frac{b}{a}$ เป็นผลบวกของราก

$r_1 + r_2 = \frac{-b}{a} = \frac{-(-k)}{a} = \frac{k}{a}$

$r_1 r_2$ = ผลคูณของราก $= \frac{c}{a} = \frac{-1}{a}$

$r_1 + r_2 + r_1 r_2 = \frac{k}{a} + \left(\frac{-1}{a}\right) = \frac{k}{a} - \frac{1}{a} = \frac{k-1}{a}$

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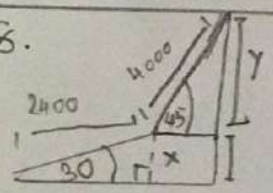
⑧



จง $x+y$

$1200 + 2000\sqrt{2}$

$= 400(3+5\sqrt{2})$

$\sin 30^\circ = \frac{x}{2400}$ $\quad \sin 45 = \frac{y}{4000}$

$\frac{1}{2} = \frac{x}{2400}$ $\quad \frac{\sqrt{2}}{2} = \frac{y}{400}$

$2x = 2400$ $\quad 4000\sqrt{2} = 2y$

$x = 1200$ $\quad 2000\sqrt{2} = y$

---

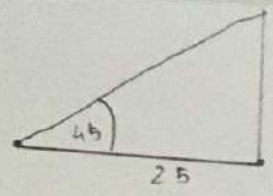
⑨ $\frac{\sin 45^\circ \cos 30^\circ + \tan 60^\circ \operatorname{cosec} 45^\circ}{\cot 30^\circ \sec 45^\circ}$

$= \frac{\left(\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}}{2}\right) + (\sqrt{3})(\sqrt{2})}{(\sqrt{3})(\sqrt{2})}$

$= \frac{\sqrt{3}\cdot\sqrt{2}\left(\frac{1}{4}+1\right)}{\sqrt{3}\sqrt{2}}$

$= \frac{1}{4} + 1 = \frac{5}{4}, 1.25$

10.



$\tan 45^\circ = \frac{x}{25}$

$1 = \frac{x}{25}$

$25 = x$

13. ถ้า Δ ด้านยาว 150° ด้านตรงข้าม n

$\times$

11. $3\tan^2\frac{\pi}{6} + \frac{4}{3}\cos^2\frac{\pi}{6} - \frac{2}{3}\sin^2\frac{\pi}{3}$

$3(\tan^2 30^\circ) + \frac{4}{3}(\cos^2 30) - \frac{2}{3}(\sin 60^\circ)$

$3\left(\frac{1}{\sqrt{3}}\right)^2 + \frac{4}{3}\left(\frac{\sqrt{3}}{2}\right)^2 - \frac{2}{3}\left(\frac{\sqrt{3}}{2}\right)^2$

$3\left(\frac{1}{3}\right) + \frac{4}{3}\left(\frac{3}{4}\right) - \frac{2}{3}\left(\frac{3}{4}\right)$

$= 1 + 1 - \frac{1}{2} = \frac{3}{2}$

14

12. $\sin A + \cos A = \sqrt{2}$

$\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} = \frac{2}{\sqrt{2}} = \sqrt{2}$

	30°	45°	60
sin	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$
cos	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$

$= \frac{2\sqrt{2}}{2}$

$= \sqrt{2}$

ดังนั้น $A = 45^\circ$

$\frac{3\sin^2 A - 2\cos^2 A}{\tan^2 A} = \frac{3\sin^2 45 - 2\cos^2 45}{\tan^2 45}$

$= \frac{3\left(\frac{1}{\sqrt{2}}\right)^2 - 2\left(\frac{1}{\sqrt{2}}\right)^2}{1}$

$= \frac{3\left(\frac{1}{2}\right) - 2\left(\frac{1}{2}\right)}{1}$

$= \frac{3}{2} - 1 = \frac{1}{2}$

15.

พื้นที่ $\square = n \times$ ยาว

$A = x(100 - 2x)$

$(3 \le x \le 10) - 2$

$(-6 \ge -2x \ge -20) + 100$

$94 \ge 100 - 2x \ge 80$

$(3 \le x \le 10)(-6 \ge -2x \ge -20)$

17. $\frac{2x^3+3x-27x}{x-3} \cdot \frac{x^2-25}{2x^2-x-45}$

$\frac{x(2x^2+3x-27)}{x-3} \cdot \frac{(x-5)(x+5)}{(2x+9)(x-5)}$

$\frac{x(2x+9)(x-3)}{x-3} \cdot \frac{(x-5)(x+5)}{(2x+9)(x-5)}$

x^2+5x

$x(x+5)$

18. $2a^{2n} - a^n b^n - 6b^{2n}$

$(2a^n+3b^n)(a^n-2b^n)$

19. 9152

$V = \frac{1}{3}\pi h(R^2+r^2+Rr)$

$9152 = \frac{\pi h}{3}(144+16+48)$

$9152 = \frac{\pi h}{3}(208)$

$\frac{9152}{208} \cdot \frac{7}{22} \cdot 3 = h$

$\frac{192,192}{4576} = h$

$h = 42.$

20.

ก่อน $r = 100$

$2r = 200$

พท. วงแหวน

$\pi(40,000-10,000)$

$\pi = 30,000\pi$

r เพิ่ม 20%. $100+20 = 120 \times 2 = 2r$

r ใหม่ 120 $240 = 2r$

$2r = 240$

พท.ใหม่ $= \pi(240^2-120^2)$

$= 43200\pi - 30,000\pi$

$= 13,200\pi$ ⟶ ทำตอบเป็นเปอร์เซ็นต์

$= \frac{13,200}{30000} \times 100$

$= 44\%.$

10.

$\left(\frac{1}{3}\right)^{1/3}, \left(\frac{1}{2}\right)^{1/2}, \left(\frac{2}{3}\right)^{2/3}$

$\sqrt[3]{\frac{1}{3}} \quad \sqrt[2]{\frac{1}{2}} \quad \sqrt[3]{\frac{4}{9}}$

$\sqrt[2]{\frac{1}{2}} \quad \sqrt[3]{\frac{4}{9}} \quad \sqrt[3]{\frac{1}{3}}$