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$$16. (1). \cos A = \frac{b^2 + c^2 - a^2}{2bc} = \frac{\sqrt{5}}{2}$$

$$\frac{1}{2}c^2 = b^2 - a^2$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$\sin B - \sin^2 A = \pm \sin^2 C$$

$$\sin^2 A \cos^2 C + \pm \sin^2 A \cdot \pm \sin^2 C + \pm \sin^2 C \cdot \pm \sin^2 A + \sin^2 C \cos^2 A$$

$$-\sin^2 A = \pm \sin^2 C$$

$$\frac{1}{2} \cos^2 C + \frac{1}{2} \sin^2 C + \frac{1}{2} \cos^2 C - \frac{1}{2} = \pm \sin^2 C$$

$$\cos^2 C + \sin^2 C + \sin^2 C - 1 = \sin^2 C$$

$$\cos^2 C + 1 - 2\sin^2 C + \sin^2 C - 1 = \sin^2 C$$

$$\cos^2 C = 2\sin^2 C$$

$$\therefore \frac{\sin^2 C}{\cos^2 C} = \frac{1}{2} \quad \therefore \tan C = \pm \frac{1}{\sqrt{2}} \quad \therefore \tan C = \frac{\sqrt{2}}{2}$$

$$12) \sin C = \frac{\sqrt{6}}{3} \quad \cos C = \frac{\sqrt{2}}{3}$$

$$\sin B = \sin(A+C) = \sin A \cos C + \cos A \sin C$$

$$= \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{3} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{6}}{3} = \frac{2\sqrt{3} + \sqrt{6}}{6}$$

$$S_{\triangle ABC} = \frac{1}{2} bc \sin A = 3$$

$$bc = 6\sqrt{2}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\therefore b = 2\sqrt{2}$$

AI Response:

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2. $\bullet, \frac{1}{2} \frac{3}{4} \zeta \bullet$ $\tilde{A} \sim \sin^3 A \cos^2 C \sim \tilde{A} \in \tilde{A} \sim -\sin^2 2A = 1/2 \sin^2 2C \sim \tilde{A} \tilde{A}$
 $\tilde{A} \tilde{A} - \text{---} \zeta \quad \tilde{E} \quad \tilde{E} \gg \in \tilde{E} \quad \tilde{A} \tilde{E} \bullet, \quad \text{! ! ! ! !} \quad \tilde{D} \tilde{N} \ddagger \bullet \quad \text{,} \quad \tilde{O} \tilde{O} \quad \Phi \quad \in \quad \tilde{E} \gg$
 $\wedge \quad \tilde{O} \bullet, \quad \frac{1}{2} \frac{3}{4} \zeta \quad \ddagger$

3. **ÖÖ ÿ ¿ **• xØÛÂ `tanC=Ú3` ÖÖ • ž Ÿ ¡ Ÿ Á Š ĐÑ
· ¿ x¹ ° ... ÛÜÝ Þ Ç ß à á â Ú á ã ^ Ÿ ä ‡

(Å) ' '

1. **f " " • **• æç `è ABC` é ê — — ~ ™ é ê è œ • ž ĭ Ÿ
`1/2bc` Á ' ' ì í · ° ... Ü ´ 1/2bcŠ î ï õ ñ ê ò ã ‡

2. **• , ½¾¿ **• À `èABC=3` ÃÄÂ `bc=6Ú2`
 — —Ç éêëœ `sinA` · ¸ ÃÄ Ôó
 `sinA` Ò ×¹ ÖÖ÷ `sinA=Ú3/2` Ý Þ | ^ ø ù `sinA` ‡

3. **ÖÖ ÿ ¿ **• ×¹ ÛÂ `b=2Ú2` • ž ÿ ¡ ÿÁŠ úû ×Ø ä
 • ¿ ×¹ ° ... ÛÜÝÐ ùb ý• â2Ú2ã ‡

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