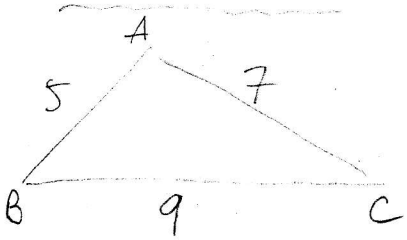
Problem 16



$$\frac{\tan\frac{A-B}{2}}{\tan\frac{A+B}{2}} = \frac{2\sin\frac{A-B}{2}\cdot\cos\frac{A+B}{2}}{2\cos\frac{A-B}{2}\sin\frac{A+B}{2}} =$$

$$= \frac{\sin A + \sin(-B)}{\sin A + \sin B} = \frac{\sin A - \sin B}{\sin A + \sin B}$$

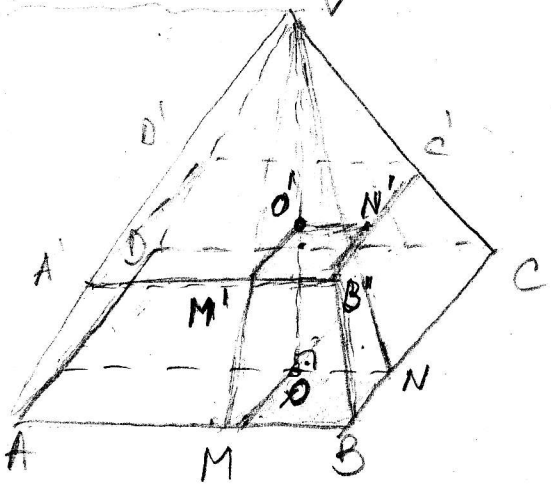
$$\frac{\sin A}{9} = \frac{\sin B}{7} = \frac{\sin C}{5} = x$$

$$= \frac{9x - 7x}{9x + 7x} = \frac{2}{16} =$$

$$= \frac{1}{8}$$

Answer: A

Problem 17



$VO \perp (ABCD)$ $\quad V_{VABCD} = 6\cdot 6\cdot\frac{9}{3} = 108$

$OM = x$

$ON = y$ $\quad V_{VOMBN} = A_{MBNO}\cdot\frac{VO}{3} =$

$$= x\cdot y\cdot\frac{9}{3} = 3xy$$

$$\frac{VO'}{VO} = \frac{O'M'}{OM} \qquad \frac{6}{9} = \frac{O'M'}{x}$$

$$O'M' = x\cdot\frac{2}{3}$$

$$\frac{VO'}{VO} = \frac{O'N'}{ON} \qquad \frac{6}{9} = \frac{O'N'}{y} \Rightarrow O'N' = y\cdot\frac{2}{3}$$

$$V_{VO'M'B'N'} = O'M'\cdot O'N'\cdot\frac{VO'}{3} = \frac{2}{3}x\cdot\frac{2}{3}y\cdot\frac{6}{3} = \frac{24}{27}xy =$$

$$= \frac{8}{9}xy = \frac{8}{9}\cdot\frac{V_{VOMBN}}{3} = \frac{8}{27}V_{VOMBN}$$

$$V_{HA'B'C'D} = \frac{8}{27}\cdot V_{VABCD} = \frac{8}{27}\cdot 6\cdot 6\cdot\frac{9}{3} = 32$$

$$V_{ABCDA'B'C'D'} = 108 - 32 = 76$$

Answer: E