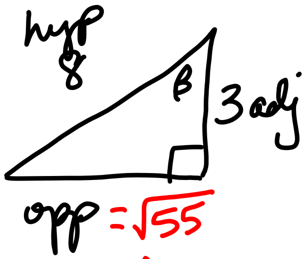
$\tan\alpha = -\frac{3}{4}, \frac{\pi}{2} < \alpha < \pi; \ \cos\beta = \frac{3}{8}, 0 < \beta < \frac{\pi}{2}$



$$9 + opp^2 = 64$$

$$opp^2 = 55$$

$$opp = \sqrt{55}$$

so $\tan\beta = \frac{\sqrt{55}}{3}$

$$\tan(\alpha - \beta) = \frac{\tan\alpha - \tan\beta}{1 + \tan\alpha \cdot \tan\beta} = \frac{-\frac{3}{4} - \frac{\sqrt{55}}{3}}{1 + \left(-\frac{3}{4}\right)\cdot\left(\frac{\sqrt{55}}{3}\right)} = \left(\frac{-\frac{3}{4} - \frac{\sqrt{55}}{3}}{1 - \frac{3\sqrt{55}}{12}}\right)$$

• every term by 12

$$= \frac{-9 - 4\sqrt{55}}{12 - 3\sqrt{55}}$$

Now rationalize:

$$\frac{(-9-4\sqrt{55})}{(12-3\sqrt{55})}\cdot\frac{(12+3\sqrt{55})}{(12+3\sqrt{55})} = \frac{-108-27\sqrt{55}-48\sqrt{55}-12\cdot 55}{144-9\cdot 55}$$

$$= \frac{-768-75\sqrt{55}}{-351} = \frac{\cancel{-}\,\cancel{3}(256+25\sqrt{55})}{\cancel{-}\,\cancel{351}\ 117} = \boxed{\frac{256+25\sqrt{55}}{117}}$$