Year 2003 Paper two: Questions supplied by Tricia

Question 78

The severity of pulmonary hypertension can be determined using continuous wave Doppler measurements of the velocity of tricuspid regurgitation. This method uses the Bernoulli equation which states that $\Delta P = 4v^2$ (where $\Delta P =$ instantaneous pressure gradient and $v =$ velocity across the valve). There is tricuspid regurgitation with a peak velocity of 4 metres/second and a mean velocity of 3.5 metres/second.

Assuming right atrial pressure is 5 mmHg, the best estimate of the peak right ventricular systolic pressure ($\pm 2$ mmHg) is:

A. 50 mmHg  
B. 55 mmHg  
C. 60 mmHg  
D. 65 mmHg  
E. 70 mmHg

Right ventricular systolic pressure is estimated as velocity across the valve +RAP

So = $4 \times 4 \times 4 + 5$

$= 69 \pm 2$ mmHg

**best estimate = E. 70 mmHg**