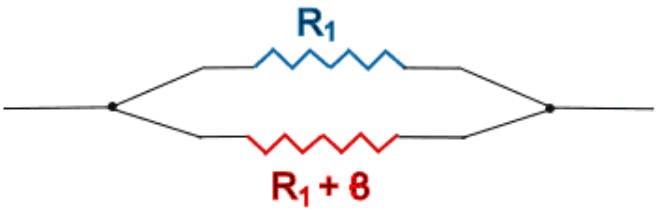
Term Test C version 1

Note that for $f(x) = \tan x$ the derivative is $f'(x) = \sec^2 x$.

(1)[5 points] The formula to work out the total resistance R_T given two resistors R_1 and R_2 in parallel as in the diagram is

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$



The total resistance has been measured at 3 ohms, and one of the resistors is known to be 8 ohms more than the other. Ohm is the unit for resistance, and only a positive number of ohms makes sense. Calculate R_1.

(2)[5 points] Solution X is a 27 percent salt solution and Solution Y is a 20 percent salt solution. How much of each is needed to make 42 gallons of a 25 percent salt solution?

(3)[5 points] You have 20 gallons of a 45 percent antifreeze solution. How many gallons of a 57 percent antifreeze solution needs to be added to make a 51 percent antifreeze solution?

(4)[5 points] Solve the equation.

$$\frac{3+x}{2} - \frac{2x-7}{3} = 3$$