The calculus part is done. Now fill in the given of $\frac{dx}{dt} = 2$ when $x = 14$; thus

$$\frac{df}{dt} = \left[\frac{2}{5}(14) + 3\right]\left[2\right] = \frac{43}{5} \cdot 2 = \frac{86}{5} = 17.2$$

That is, $\frac{df}{dt} = 17.2$ ~~th~~ thousand dollars / summer

or the income from parking increases $17,200 each summer.

But there's another question asked. It's how the rate is changing three summers from now.

Since $\frac{dx}{dt} = 2$ now (initial condition)

then in three summers the population x will be a new value of

$$(14)(3) = 42 \text{ thousand tourists}$$

Therefore, $\frac{df}{dt} = \left[\frac{2}{5}(20) + 3\right]\left[2\right] = \$22,000$ rate the meter income changes

new x   same $\frac{dx}{dt}$

How did we get the new x?

We know $\frac{dx}{dt} = 2$ each summer (pop tourists increases 2000 / summer)

In 3 summers, it's 6 higher than 14.

So $x = 14 + 6 = 20$ thousand tourists