

P3.8-7) A car drives along a curvy mountain road. The driver uses the gas pedal to uniformly accelerate the car from 10 mph to 40 mph in 30 seconds around a constant 1000-ft radius curve. Determine the car's total acceleration at 10 seconds after the car starts to accelerate.

Given:

Find:

Solution:

Acceleration

What direction is the acceleration due to the application of the gas pedal?

x-direction *y*-direction *n*-direction

t-direction *r*-direction θ -direction

Determine the acceleration due to the gas pedal.

$a =$ _____

Velocity

What direction is the velocity of the car?

x-direction *y*-direction *n*-direction

t-direction *r*-direction θ -direction

Calculate the velocity of the car at 10 seconds.

$v =$ _____

Acceleration

Calculate the car's total acceleration.

$\mathbf{a} =$ _____