

Sum up the News – June 6th, 2016

Vocabulary

1. The radical function $f(x) = \sqrt{2x - k}$ is translated 3 units to the right and 5 units up. For what values of x does the new function exist?

A. $x \geq \frac{k}{2} - 3$

B. $x \geq -\frac{k}{2} + 5$

C. $x \geq \frac{k}{2} + 3$

D. $x \geq \frac{k}{2} + 5$

2. If the vertex of a parabola is a $(-1, 8)$ and the y -intercept is at $(0, 5)$, then what is the leading coefficient when the equation is in general form?

A. -5

B. -3

C. 3

D. 4

3. A cone and cylinder both have heights equal to their diameters. What is the ratio of the surface area of the cone to the surface area of the cylinder?

A. 1 to 3

B. $(1 + \sqrt{2})$ to 4

C. $(1 + \sqrt{5})$ to 6

D. 3 to 5

Based on the article “Swiss inaugurate \$12B rail tunnel, world’s longest” on page A7 of the Thursday, June 2nd, Seattle Times.

4. After 17 years of construction, the Gotthard Tunnel passing beneath the Swiss Alps is finally complete. Construction cost \$12 billion and the tunnel is the world longest at 35.4 miles. What is the average distance that engineers tunneled beneath the Alps each day? (1 mile = 5280 feet)

- A. 0.14 feet per day
- B. 3.7 feet per day
- C. 8.2 feet per day
- D. 30 feet per day

5. The Gotthard Tunnel passes under the Swiss Alps, up to 1.4 miles beneath the surface and it stretches for 35.4 miles. It replaces the 33.4-mile Seikan Tunnel in Japan as the world’s longest tunnel. The Gotthard Tunnel lets trains run through it at 160 mph, while the Seikan allows a maximum speed of just 85 mph. How much longer does it take a train to pass through the Seikan Tunnel than it does to pass through the Gotthard Tunnel?

- A. 10.3 minutes longer
- B. 13.3 minutes longer
- C. 14.7 minutes longer
- D. 23.6 minutes longer

6. The tunnel has two tracks, one for northbound trains and one for southbound ones. The tunnel will serve 65 passenger trains and another 260 freight trains each day. If the northbound and southbound train traffic will be equal, then what is the average length of time between when a train would enter the tunnel traveling northbound?

- A. 5 minutes
- B. 9 minutes
- C. 12 minutes
- D. 14 minutes

Based on the article “‘We are playing catch-up’ to oil-train danger” on page A1 of the Saturday, June 4th, Seattle Times.

7. Train transport of oil in Washington was unknown until 2012. That year 500 million gallons were transported. In 2013 that number increased to 700 million gallons. If the volume of oil transported by rail continues to increase linearly, then how much would be transported by train through Washington State this year?

- A. 600 million gallons
- B. 1.3 billion gallons
- C. 2.10 billion gallons
- D. 3.50 billion gallons

8. A state study has suggested that train may carry as much as 17 billion gallons through Washington State by the year 2035. That increase would lead to more oil trains passing through the Columbia River Gorge, sending on average 4.5 more trains each day, each carrying 120 train cars of flammable oil. If 35% of the increase in the oil train traffic would pass through the Columbia River Gorge, then approximately how many gallons of oil would each oil tank train car carry?

- A. 30,200 gallons per train car
- B. 57,400 gallons per train car
- C. 86,300 gallons per train car
- D. 135,000 gallons per train car

9. The additional trains would stretch 1.5 miles long and would include the 120 oil tank train cars, plus four locomotives, two each at the front and back of the train. If the locomotives are 70 feet long, approximately how long are the oil tank train cars?

- A. 58 feet
- B. 60 feet
- C. 64 feet
- D. 66 feet

10. The oil tank train cars store the oil in a cylindrical container that runs most of the length of the car. Each cubic foot can hold 7.5 gallons. If the cylinder is 95% of the length of the car, what is the approximate diameter of the cylindrical tanks?

- A. 5 feet
- B. 9 feet
- C. 12 feet
- D. 19 feet

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