

1. Find the gradient through (1,2) and (4,8).

2. For $x=2t+1$, find x at $t=3$.

3. Find the horizontal ground distance in the stated flight model.

4. Find the gradient of the line through $(-1,3)$ and $(5,-1)$. Give it to 3 significant figures.

5. Find the radius of $x^2+y^2-4x+2y-20=0$.

6. Perpendicular nonvertical lines have equal gradients.

☐ True ☐ False
7. Elimination can lose the domain and direction, so state the restrictions from the parameter separately.

☐ True ☐ False
8. The Cartesian flight curve is a physically valid model for every real x .

☐ True ☐ False
9. A vertical line $x=k$ has an undefined gradient and cannot be written as $y=mx+c$.

☐ True ☐ False
10. A line perpendicular to any radius is a tangent, wherever it crosses the plane.

☐ True ☐ False

1. **2.0**

Gradient= $(8-2)/(4-1)=6/3=2$.
2. **7.0**

 $x=2\times3+1=7$.
3. **24.0**

 $y=t(20-5t)=0$ gives $t=4$ after launch; $x=6\times4=24$ m.
4. **-0.6666666666666666**

 $m=(-1-3)/(5-(-1))=-4/6=-2/3$.
5. **5.0**

The completed equation has $r^2=4+1+20=25$, hence $r=5$.
6. **False**

Perpendicular gradients multiply to -1 : a gradient of 2 needs $-1/2$. Parallel lines have equal gradients.
7. **True**

True. Elimination can lose the domain and direction, so state the restrictions from the parameter separately.
8. **False**

The model applies only while the object is in flight, between launch and landing.
9. **True**

True. A vertical line $x=k$ has an undefined gradient and cannot be written as $y=mx+c$.
10. **False**

A tangent must be perpendicular to the radius at the point where it touches the circle.