Quadratic reciprocal circle and exponential relations

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

• Connect equations and graphs of several non-linear relations.

• Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

Inspect a relation’s domain, intercepts, symmetry and asymptotes. Quadratics form parabolas; reciprocal rules such asy=1/x exclude x=0; circle equations need not define one y for each x.

Exponential rules such asy=2^x change by a constant factor for equal x steps. Digital graphs help compare features but do not replace exact reasoning about restrictions.

Worked example

Describe $x^2+y^2=9$.

The squared distance from the origin is 9.

Radius is $\sqrt{9}=3$.

Answer: Circle centred at (0,0), radius 3

Try it yourself

Name: _____ Date: _____

1. Find y=1/x at x=2 and x=-4.

2. State the domain restriction of y=5/x.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 1/2 and -1/4

Use reciprocal values.

2. $x \neq 0$

Division by zero is undefined.

Curriculum reference: VC2M10A11

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