TEST YOUR SKILLS

1 Part of a graph is given below.



Sketch the rest of this graph if the graph has the indicate symmetry.

- a) y-axis symmetry.
- b) *x*-axis symmetry.
- c) Origin symmetry.
- d) Both *y*-axis and origin symmetry.

(USA Tacoma Community College, Worksheet)

- **2 TEST** Which of the following functions is symmetric respect to the *y*-axis?
 - **A** y = 2x
 - **B** $y = x^2 + 2$
 - **C** $y = (x 2)^2$
 - **D** $y = (x + 2)^2$
 - **E** $y = x^2 + 2x$

(USA University of Wyoming, Practice Test, Finals)

- **3 TEST** Starting with the point (3; 4) in the cartesian plane, reflect it across the *x*-axis, then rotate it 180° around the origin, and then finally translate it vertically by 5 units. The final point is:
 - A (8; -4).D (-4; 8).B (3; 9).E (-3; 9).C (-3; 1).

(USA Marywood University Mathematics Contest, 2001)

- **4 TEST** The point (a; b) is reflected over the *y*-axis to the point (c; d), which is reflected over the *x*-axis to the point (e; f). Compute ab ef.
 - ▲
 0.
 D
 2cd.

 B
 2.
 E
 − 2cd.

 C
 2ab.

(USA University of North Carolina: State Mathematics Finals Contest, 2003)

5 TEST Let *P* be the point (3; 2). Let *Q* be the reflection of *P* about the *x*-axis, let *R* be the reflection of *Q* about the line y = -x and let *S* be the reflection of *R* through the origin. Then *PQRS* is a convex quadrilateral. What is the area of *PQRS*?

A 14 **B** 15 **C** 16 **D** 17 **E** 18

(USA North Carolina: State High School Mathematics Contest, 1997)

6 Suppose that a particle sitting at the point (3; 6) is rotated 30° in the clockwise direction about the point (-1; 2). Give the coordinates of the new location of the particle.

(USA Texas A&M University Math Contest, 1999) $[(2\sqrt{3}+1; 2\sqrt{3})]$

GLOSSARY

clockwise:	graph: grafico	to rotate: ruotare
in senso orario	to reflect: riflettere	to translate: traslare