Zestaw 10 1N

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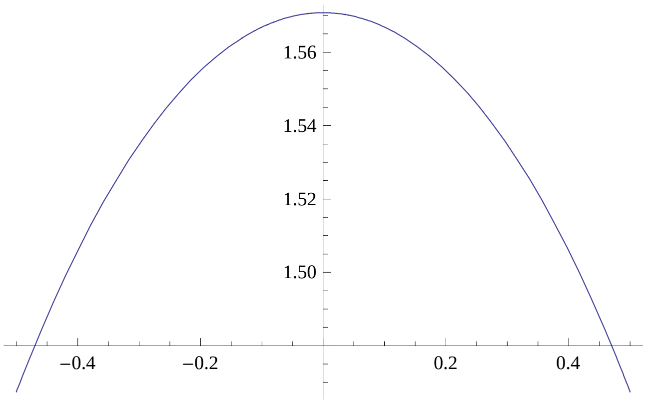
Wykonano wykres calki $\int_0^{\frac{\pi}{2}} \sqrt{1 - m^2 \operatorname{Sin}[t]^2}\, dt$

In[1]:=
```
f[x_] = Integrate[Sqrt[1 - x^2 Sin[t]^2], {t, 0, π/2}];
Plot[f[x], {x, -0.5, 0.5}]
```

Out[2]=



Obliczono przyblizenia Pade R_{22}, R_{04} *i* R_{13}.

In[3]:=
```
f[x_] = Integrate[Sqrt[1 - x^2 Sin[t]^2], {t, 0, π/2}, GenerateConditions → False];
```

Jawne wzory na przyblizenia:

In[4]:=
```
R22[x_] = N[PadeApproximant[%, {x, 0.47, 2}]]
```

Out[4]=
$$\frac{1.48008 - 0.504561\,(-0.47 + x) - 1.21425\,(-0.47 + x)^2}{1. - 0.0674282\,(-0.47 + x) - 0.488\,(-0.47 + x)^2}$$

In[5]:=
```
R04[x_] = N[PadeApproximant[%, {x, 0.47, {0, 4}}]]
```

Out[5]=
$$1.48008 \Big/ \left(1. + 0.273473\,(-0.47 + x) + 0.425625\,(-0.47 + x)^2 + 0.369453\,(-0.47 + x)^3 + 0.475129\,(-0.47 + x)^4\right)$$

In[6]:=
```
R13[x_] = N[PadeApproximant[%, {x, 0.47, {1, 3}}]]
```

Out[6]=
$$\frac{1.48008 - 1.90343\,(-0.47 + x)}{1. - 1.01256\,(-0.47 + x) + 0.0739291\,(-0.47 + x)^2 - 0.177914\,(-0.47 + x)^3}$$

Wykresy funkcji (kolor czerwony) i jej przyblizen, odpowiednio : R_{22} kolor niebieski, R_{04} − czarny, R_{13} − zielony.

In[7]:=
```
Show[Plot[f[x], {x, -0.5, 0.5}, PlotStyle → {Red}],
 Plot[R22[x], {x, -0.5, 0.5}, PlotStyle → {Blue}],
 Plot[R04[x], {x, -0.5, 0.5}, PlotStyle → {Black}],
 Plot[R13[x], {x, -0.5, 0.5}, PlotStyle → {Green}]]
```

Out[7]=